

# **Social Exclusion, Self-Esteem, & Mating Relationships: Testing a Domain-Specific Variant of Sociometer Theory**

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A thesis submitted in partial fulfilment of the requirements for a  
Doctorate of Philosophy in Psychology at the University of  
Canterbury

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**2007**

### **Acknowledgements**

There are a number of people that I would like to acknowledge who helped me bring this thesis to completion. First, I would like to acknowledge my supervisors Professor Garth Fletcher (University of Canterbury) and Associate Professor Bruce Ellis (University of Arizona, Tucson, AZ) for their guidance, support, and flexibility throughout the process of completing my thesis. I would also like to acknowledge all of the support staff in the Psychology Department, especially Glenn Lewis and Gerard Mesman, in addition to Bruce Penno of IT Mac support. I would also like to acknowledge the Psychology Department for the scholarship that they provided.

My thanks go to all the participants who took part in my research. I would also like to thank my confederates and research assistants (Sjaan McCarthy, Lauren Gyde, Aleisha Manion, Amanda Thomas, Shannon Pomeroy, Nick McDonnell, Thomas Newton, Jacob Shanks, Nick Tither, and Ryan Collingwood) for all their help.

Finally, and by far not the least, I would like to acknowledge the love, support and patience of my family (Nicolette, Sjaan, and Liam), especially Nicolette.

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## **Abstract**

Sociometer Theory (Leary & Downs, 1995; Leary, Tambor, Terdal, & Downs, 1995) proposes that state self-esteem is a gauge of social inclusion. Expansions to this theory by Kirkpatrick and Ellis (2001) suggest that this is a domain specific process with different sociometers for different adaptive domains. Two studies were conducted to test predictions derived from the domain specific sociometer model of self-esteem proposed by Kirkpatrick and Ellis (2001). In Study 1, participants ( $N = 83$ ) who were currently single, received feedback to indicate either acceptance (inclusion) or rejection (exclusion) for a potential dating situation. The results indicated that participants who were accepted versus rejected reported increases in state self-esteem and higher mating aspirations. The same effects were not present for either friendship aspiration or friendship investment, indicating domain specificity. The effect of the manipulation on mating aspirations was also significantly mediated by state self-esteem. Study 2 replicated Study 1 using participants ( $N = 81$ ) who were currently in an intimate relationship. The results indicated that participants who were accepted versus rejected reported increases in state self-esteem and decreases in perceived relationship quality (commitment and satisfaction). The same effects were not present for either friendships aspirations or friendship investment. The association between the manipulation and resulting changes in perceived relationship quality were significantly mediated by state self-esteem, with state self-esteem acting as a suppressor. The results from both studies support a domain-specific conceptualisation of sociometer theory.



## Chapter 1: Theoretical Context

### Evolutionary Psychology

An evolved human psyche is not a new concept having been mentioned in the broader scientific literature for well over a century (for example, Darwin, 1880), and in some of the earliest psychological writings, such as *The Principles of Psychology* by William James (1890). More recently Buss (1995; 2004) and Cosmides and Tooby (1997), among others, have explicitly described a framework of conceptualising and explaining human cognitive processes and behaviour within an evolutionary psychological framework, with this paradigm slowly gaining acceptance in the psychological arena. Geher, Miller, and Murphy (2008) have described the 1990s and current decade “as the period of the *evolution revolution* in psychology” (p. 8).

Indeed, an evolutionary approach to psychology has found its way into most branches of contemporary psychology, from the psychology of intimate relationships (Fletcher, 2002) to the clinical psychology of personality disorders (Davis & Millon, 1999). Critics have argued in the past that evolutionary models are not strictly testable and produce long lists of just-so stories. Nevertheless, the formulation of detailed evolutionary theories, along with an increasing flow of varied and ingenious empirical tests, have stemmed the force of such complaints and led to a general acceptance of research from an evolutionary perspective into mainstream psychology (Simpson & Campbell, 2005). However, a thoroughgoing analysis of the merits of evolutionary psychology is beyond the purview of this thesis. Rather, the aim in this preliminary section is to provide a basic conceptual framework that forms the background to the theories and methods used in this thesis. This section will cover the fundamentals of

evolutionary psychology and outline a broad overview of the contribution of evolutionary psychology to the understanding of various aspects of mating relationships.

### **Fundamentals of Evolutionary Psychology**

At the conceptual level of evolutionary psychology it is proposed that there exist an interplay between adaptive problems, cognitive problems and neuropsychological processes (Cosmides & Tooby, 1997). Alongside this proposition, there are three key premises within evolutionary psychology: domain specificity, numerousness, and functionality (Buss, 1995; Larsen & Buss, 2005). I describe these here briefly.

***Domain specificity.*** All evolved mechanisms are designed through selective pressures to solve specific adaptive problems. That is, there exist different decision rules for different contexts or environmental problems, as different problems require different solutions. Having one or two global strategies for solving multiple distinct adaptive problems is potentially maladaptive (Buss, 1995; Larsen & Buss, 2005).

***Numerousness.*** Numerousness is the concept that there is more than one psychological mechanism for the various adaptive problems faced by humans; for example, psychological mechanisms for mate selection, assessment of danger, or parenting. Each of these psychological mechanisms is distinct and domain specific. That is, the psychological mechanism for the selection of mates should not be relevant for the assessment of danger; first, because the adaptive problems are different, and second, this would make one or the other of the mechanisms redundant (Buss, 1995; Larsen & Buss, 2005).

**Functionality.** The premise of functionality is that each psychological mechanism is designed to fulfil a precise adaptive process. For example, to understand how the experiences of rejection and acceptance affect the self-concept, we first need to understand the function of self-esteem. That is, identifying the adaptive problem(s) or selective pressure(s) that a psychological mechanism such as self-esteem has evolved to solve should help us to understand the proximal-level processes involved in how experiences like acceptance or rejection impact on self-concepts (Buss, 1995; Larsen & Buss, 2005).

### **Evolutionary Psychology and Mating**

One of the most popular and well-researched areas from an evolutionary psychological standpoint is that of mating. Most authors in the area of evolutionary psychology and mating cite Darwin (1880) as the inaugural theorist, starting with his theory of sexual selection. Darwin (1880) suggested intrasexual competition and preferential mate selection as important aspects in the evolution of mating adaptations. The next two important contributors were Trivers (1972), who outlined the relative contributions of parental investment to mating strategies, and Symons (1979), who argued for an adaptationist view of male and female mating strategies. These seminal pieces of work have revolutionised our understanding of human mating strategies (Buss, 2005).

An evolutionary psychology account of mating strategies proposes that there are specific psychological mechanisms that have evolved to solve the adaptive problems and questions associated with mating. For instance, how do we select potential mates? What characteristics are important in a potential mate to increase the chances of genetic survival? Once we select a mate, how do we retain them? The

evolutionary psychology framework has influenced contemporary conceptualisations of intimate relationships (for example, Fletcher, 2002) and has sparked the creation of new theoretical constructs such as *Mating Intelligence* (Geher & Miller, 2008). This relatively new approach to examining human mating and associated outcomes has in turn started a vast amount of research in the area. There are numerous chapters devoted to the various aspects of mating in evolutionary psychology handbooks (for example see, Campbell & Ellis, 2005; Gangestad, Thornhill, & Garver-Apgar, 2005; Malamuth, Huppin, & Paul, 2005; Schmitt, 2005; Shackelford, Pound, Goetz, & LaMunyon, 2005; Sugiyama, 2005; Symons, 2005), and indeed entire texts devoted to aspects of mating intelligence (e.g., Geher & Miller, 2008). Thus, it is beyond the scope of this thesis to cover all the research and theories within this area. I will therefore present some basic elements here to set the context for the current research.

A key premise in the evolutionary model is that there are differential potential costs and benefits associated with seeking a potential mate and successfully mating. These potential costs and benefits shape and evolve adaptive mating strategies. For example, the minimum real and potential costs for women after sex (i.e., nine months pregnancy plus child rearing) far outweigh the real and potential costs for men (i.e., a few minutes of intercourse and loss of sperm). Because selection pressures for women are different from men, women and men approach and select potential mates based on different criteria. Indeed research has demonstrated the pervasiveness of associated sex differences in preferences for mate selection with women preferentially seeking males with higher status and resources and giving less importance to attractiveness than men (Li, Bailey, Kenrick, & Linsenmeier, 2002). These preferences reflect the potential costs associated with mating. Females are looking for a male who can potentially provide care and protection for her and their offspring. Males on the other

hand, if they are to invest their potential resources into the relationship want to ensure that they are mating with a female with good genes that will ensure the survival of the children. The best indicator of good genes is physical attractiveness (Gangestad & Simpson, 2000; Gangestad et al., 2005). These sex differences have consistently been found across cultures even within traditional hunter-gather societies (Marlowe, 2004).

A second important factor is concerned with intersexual mate selection, which is related to intrasexual mate competition (Buss, 1988). That is, male and female mate preferences influence competition within the sexes to display those preferred characteristics. For example, as females preferentially seek males with higher real or potential status and resources, males will then compete with each other to gather resources and maintain status (Buss, 2008). In turn, intrasexual competition calibrates self-perceived mate value. For example, men who are exposed to higher status males, and women who are exposed to highly attractive females, experience a lowering in their self-perceived mate value (Gutierrez, Kenrick, & Partch, 1999). Individuals therefore require a psychological mechanism that is not only sensitive to mating preferences of the opposite sex, but also sensitive to relative mate value standings within the same sex. Self-perceived mate value is positively associated with relationship satisfaction and self-esteem (Brase & Guy, 2004; Shackelford, 2001). This implies adaptive links among intra and intersexual mating competition, self-perceived mate value, relationship satisfaction, and self-esteem.

## **Self-Esteem**

*“Trying to keep abreast of the research on the self is like trying to get a drink from a fire hose.”*

Roy F. Baumeister (1998)

*“Perhaps more ink has been devoted to the issue of self-esteem than to any other single topic in psychology.”*

Kirkpatrick and Ellis (2001)

### **Background**

The two quotes above capture the essence of research and writing on the psychology of the self and self-esteem. As with evolutionary psychology, self-esteem is not a new concept or area of research by any stretch of the imagination, having first being written about in James’s (1890) *Principles of Psychology* (Coopersmith, 1967; Leary, 1999b). However, as Leary (1999a; 1999b; Leary & Baumeister, 2000) has argued, despite the breadth of theory and literature, there is still no consensus on either what self-esteem is or what function it performs. According to Leary (1999a) this problem arises because, while most theories offer insights into self-esteem, they often suffer from empirical or conceptual difficulties. To counter this problem, Leary and colleagues (Leary & Downs, 1995; Leary et al., 1995; Leary, Tambor, Terdal, & Downs, 1999) have offered a theory of self-esteem within an evolutionary psychology framework – sociometer theory.

### **Sociometer Theory and Extensions**

***The original sociometer theory.*** Sociometer theory as proposed by Leary and colleagues (Leary & Downs, 1995; Leary et al., 1995) was born out of an attempt to answer two fundamental questions: 1) what is self-esteem?; and, 2) what is the function of self esteem? Based on his early research work, Leary had observed that

self-esteem was highly correlated with social anxiety, jealousy, loneliness, and depression (Leary, 1990; 2003). Along with these observations, and consistent with earlier theorists such as Cooley (1902) and Rosenberg (1979), he proposed that self-esteem is a reflection of an individual's perceptions of how others view them. Specifically, Leary proposed that state self-esteem was an interpersonal monitor designed by natural selection to gauge an individual's level of social inclusion, based on the evolutionary notion that a key adaptive problem faced by our ancestors was group inclusion. Exclusion from a group could result in reduced survival due to loss of resources and benefits associated with group living. Using the analogy of a fuel gauge in a car, which is designed to alert the driver when to refill, Leary proposed that state self-esteem monitors the environment to alert an individual when social inclusion is low, thus motivating the person to take corrective action (Leary & Downs, 1995; Leary et al., 1995).

In sum, state self-esteem as conceptualised by Leary and colleagues (Leary & Downs, 1995; Leary et al., 1995) is a sociometer. A sociometer is a psychological gauge (cognitive-affective mechanism) designed by natural selection to monitor the environment for changes in social inclusion, alerting the organism via negative affect when inclusion is dangerously low and thus motivating the individual to take corrective action.

***State versus trait.*** Trait self-esteem is a person's baseline or dispositional level of self-esteem – the level of self-esteem 'on average.' This is generally the focus of most self-esteem research; specifically examining the differences between people with high and low trait self-esteem. However, the focus of sociometer theory is state self-esteem. State self-esteem is conceptualised as those moment to moment changes in feeling of self-worth dependent on context and time (Heatherton & Polivy, 1991;

Leary & Downs, 1995). Although these changes are transient, consistent levels of state self-esteem over time may also function to calibrate trait self-esteem (Hill & Buss, 2006).

***Extensions to sociometer theory.*** In an important extension to Leary and colleagues original work, Kirkpatrick and Ellis (2001; 2004; 2006) proposed a domain specific model of sociometer theory. Kirkpatrick and Ellis (2001), although acknowledging the merits of the original model, noted some theoretical weaknesses. Kirkpatrick and Ellis (2001) proposed that if self-esteem is a barometer of social exclusion-inclusion designed by natural selection, then key premises of evolutionary psychology need to apply to this theoretical mechanism – domain specificity, numerousness, and functionality. While Leary and Downs (1995) covered the functionality premise within an evolutionary psychological framework, they had not completely addressed the domain specificity and numerousness premises. Kirkpatrick and Ellis (2001) picked up and expanded where Leary and colleagues had left off theoretically.

Whereas Leary and colleagues (Leary & Downs, 1995; Leary et al., 1995) posited a global sociometer, Kirkpatrick and Ellis (2001) proposed multiple domain-specific sociometers, each designed to monitor inclusion in distinctly different group-settings that each have their own set of adaptive problems. Kirkpatrick and Ellis (2001) did not address the question of exactly how many distinct sociometers there might be. However, two separate domains that they propose as being especially important are instrumental coalitions and mating relationships. (Examples of instrumental coalitions in a modern context might be a sports team, gang, or friendship clique.) An example of a domain specific sociometer in action would be, being rejected by a potential or current romantic partner (mating relationships



domain), causing a man to take a hit on his mate-sociometer, and changing his mate selection behaviour, but leaving his coalitional sociometer intact. As an analogy, imagine Henry is out on the town. He experiences several rejections after propositioning members of the opposite sex. It is likely that his state self-esteem drops and he is likely to change his proposition tactics. However, it is unlikely that this will influence how he feels about his team-mates on the sports field the next day, or related behaviour.

Furthermore, Kirkpatrick and Ellis (2001) suggest that the fuel gauge analogy posited by Leary and colleagues (Leary & Downs, 1995; Leary et al., 1995) is somewhat misleading, given that gauges only display measurements. They offer instead the analogy of an engine temperature sensor, which not only alerts the driver (via the gauge on the dashboard), but also automatically starts the cooling fan when the engine gets to a critical temperature. Kirkpatrick and Ellis (2001) go on to argue that, similar to a dashboard with several gauges, there exist an array of sociometers, each designed to measure inclusion in a particular group with specific corrective action (sometimes automatic) relevant to that particular group. Put simply, and moving back to the car dashboard analogy, one would not expect to stop and put petrol in petrol tank, if the temperature gauge and light indicated the need to stop and fill up the radiator with water.

In a more recent extension of sociometer theory, Hill and Buss (2006) suggest caution when invoking a domain specificity model of sociometers. They argue that in some instances the argument for domain specificity goes too far and overlooks the fact that some attributes contribute to successfully solving problems *across* domains. Hill and Buss (2006) use the example of social status, which is important in both the mating domain and the coalitional domain. They further argue that using a separate

mechanism for each self-esteem domain may not be parsimonious – negating the way in which evolutionary efficiency is a powerful force in producing adaptations.

Hill's and Buss's (2006) cautionary note regarding domain specificity offers an explanation for the positive correlations typically found across self-esteem domains. That is, the extent to which an attribute raises self-esteem in one domain (a reflection of greater social value, hence social inclusion) should be associated with increases in another domain in which that attribute is also valued. However, when valued attributes differ markedly across domains there should be weak correlations, thus establishing domain specificity. One example is physical attractiveness. Physical attractiveness, especially for females, is an important attribute in the mating domain. However, physical attractiveness is not nearly as important as other attributes, such as cooperativeness, within a coalitional domain (Cottrell, Neuberg, & Li, 2007). Hill's and Buss's (2006) models expand Kirkpatrick's and Ellis's (2001; 2004; 2006) approach and provides a framework for predicting complete or partial specificity versus generality across conditions.

### **Mating Relationships**

Dating (at least in its preliminary stages) could be defined as a social activity with another person with a common aim of assessing his or her suitability as a long-term romantic partner. Aside from assessing longer-term relationship suitability, dating can also be driven by short-term goals related to mate selection (e.g., having sex or gaining resources). From an evolutionary perspective, there exist large potential costs and benefits in both short-term and long-term mate selection. Children produced from these relationships ensure the survival of the parental genes. Selecting the wrong partner reduces the chances of survival, which in turn limits their future

mating opportunities, potentially ending a genetic lineage. Mate selection is therefore a key aspect of human genetic survival. There is also a huge literature published on mate selection preferences and related criteria (for example, Buss & Schmitt, 1993; Buunk, Dijkstra, Fetchenhauer, & Kenrick, 2002; Feingold, 1990; Fletcher, 2002; Gangestad & Simpson, 2000; Gutierres et al., 1999; Kenrick, Neuberg, Zierk, & Krones, 1994; Li, 2008; Li et al., 2002; Li & Kenrick, 2006, to name a few).

Researchers have investigated both short-term and long-term mating strategies in the context of an evolutionary framework. For long-term relationships where there is more time to assess traits that are not immediately obvious, women typically prioritise status and ability to acquire resources (Fletcher, Tither, O'Loughlin, Friesen, & Overall, 2004; Li, 2008; Li et al., 2002), followed by traits such as warmth and trustworthiness (Fletcher et al., 2004; Regan, 1998a), with men prioritising attractiveness and vitality (Fletcher et al., 2004; Li, 2008). But, short-term mating strategies differ, with women (similar to men) basing their judgements on the most salient immediate aspects they can assess – physical attractiveness (Fletcher, 2002; Fletcher et al., 2004; Li, 2008; Li & Kenrick, 2006; Regan, 1998a; 1998b). Physical attractiveness acts as an indication of genetic and physical health, ensuring that should the short-term interaction produce offspring they are of good genetic quality (Gangestad & Simpson, 2000; Li, 2008).

Given that the ability (e.g., traits of ambitiousness) and motivation (traits of kindness and loyalty) to invest in a relationship and children over the long haul are not available in short-term contexts, it makes good sense that both men and women elevate the importance given to physical attractiveness in short-term contexts. After all, the obtaining of good genes comprises the only payoff from such relationships (from an evolutionary angle).

Mate selection preferences are subtly different from mate aspirations (a key variable in the research described later) but the two constructs are related. Therefore, understanding the research and theory concerned with mate selection and mate preferences is a key to understanding mate aspirations.

### **Mate Aspirations**

The act of selecting a mate (i.e., mate selection) is an end process, outcome, or goal state – an adaptive problem requiring a solution. In humans, as against most other species, this process often takes considerable time, and arguably never ends, given that mate de-selection is a prominent process in humans. At face value, the most effective mating strategy might be to simply aim for individuals of the highest mating value possibly available – a perfect 10 across all possible mating traits. However, there are many potential costs associated with the strategy of searching for the perfect 10, such as wasting time searching and facing the psychological costs of repeated rejections. Even if finding a perfect 10 is initially successful such a mate would require massive investment and mate-guarding effort (Fletcher, 2002). In addition, as Fletcher (2002; 2004) argues there are few real people (as opposed to a fictional romance character) who are perfect 10s. Thus, the questions become: what are people looking for in a mate, what are the necessities, what are the luxuries, and how do people compromise?

People almost certainly want the best deal they can get in a mate, matching their own minimum standards (Regan, 1998a), and fitting their “budget” constraints when shopping for a potential mate (Li et al., 2002; Li & Kenrick, 2006). Using the principle of economics, Li et al. (2002) demonstrated that when people are given a limited mating budget they compromise on the less important aspects in a potential

mate and focus on the essentials – the necessities. Li et al. (2002) reported that for males, the most important aspect in a potential mate is physical attractiveness and for females it is resource acquisition. In a similar line, Fletcher et al. (2004) demonstrated in a forced choice paradigm for long-term relationships, that when having to make trade-offs on mate value criteria, women (as opposed to men) perceive warmth/trustworthiness and status/resources as more important and attractiveness/vitality as less important. Finally, Li and Kenrick (2006) also reported that when given a “mating budget”, both men and women will prioritise specific mate criteria consistent with the highest potential benefits and costs associated with mating. Thus, women prioritise access to resources, whereas men place more importance on good genes (attractiveness) (Gangestad & Simpson, 2000).

Minimum standards, budget constraints, and willingness to compromise on potential mate qualities, are in turn reliant on self-perceived mate value (Regan, 1998b), as mating is an assortative process (Buss & Barnes, 1986; Figueredo, Sefcek, & Jones, 2006; Kurzban & Weeden, 2005). That is, people tend to form intimate relationships with others of relatively the same mate value (Feingold, 1988). Throw into this mix the caveat that getting the best deal in the dating market place is a two-way process (i.e., as well as selecting, you are also selected) and you have an adaptive dilemma to solve. Evolutionary theory provides a convincing model of the ultimate causes of mating criteria and preferences (and associated preferences), and it is also clear that self-perceptions of mate value help calibrate the standards that individuals aspire to, but we are still left short of understanding how the proximal emotional and cognitive systems translate these dispositional elements into decisions and behaviour.

Penke and colleagues (Penke, Todd, Lenton, & Fasolo, 2008) refer to this process as an aspect of human *Mating Intelligence* and eloquently propose an

overview of how mate aspirations and mate selection take place within a human evolutionary adaptive framework. A key component within this cognitive processing framework is a domain-specific mating sociometer (Kirkpatrick & Ellis, 2001; 2004; 2006). Penke et al. (2008) describe how the theory outlined by Kirkpatrick's and Ellis (2001) might function, citing relevant empirical evidence. For example, Penke et al. (2008) suggest that given the constraints of the dating market place—inter and intra sex competition—a mating sociometer is needed to track one's own mate value relative to others of the same sex. However, before the sociometer can be utilised to help regulate mating decisions, calibration is required. They argue that people learn their relative mate value through early adolescent experiences with the opposite sex, such as acceptance and rejection experiences in flirtatious interactions and this calibration in turn helps to set adult aspiration levels (Penke et al., 2008).

Despite the vast amount of research investigating aspects of intimate relationship processes (Fletcher, 2002) and mating intelligence (Geher & Miller, 2008), it does not appear that anyone has specifically tested the mating sociometer process itself, with the bulk of the research appearing to focus on mate selection rather than aspirations per se (see Penke et al., 2008, for a comprehensive review). Furthermore, the process of calibrating aspirations does not simply stop after one has passed through adolescence and into adulthood. Calibrating mating aspirations probably comprises an ongoing process in specific relationships, even after mate selection has finished and mate retention has begun. Testing the sociometer process and determining if this process continues from aspirations through to mate retention comprises the focus of the research in this thesis.

### **Relationship Quality**

Once mate aspirations have been set, and a mate selected, the next adaptive problem to be faced is ensuring that the relationship is maintained and possibly replaced if it is not going well, or better alternatives become available. What processes are driving this change in the perception of current relationship quality? According to the ideal standards model (Fletcher, Simpson, Thomas, & Giles, 1999; Simpson, Fletcher, & Campbell, 2001) people have internal representations of their ideal partner and relationship. These images are a reflection of the qualities they want their partner to have, the type of relationship they want, and their self-perceptions (Campbell & Ellis, 2005). Perceived relationship quality is in part dependent on how closely a current partner is perceived to fit these standards, with greater disparity correlating with lower perceived relationship quality. Furthermore, people who have higher self-perceptions of their own potential mate-value, have higher ideal standards for a potential or current partner (Campbell, Simpson, Kashy, & Fletcher, 2001).

Following this argument, it is plausible that if self-perceptions of current mate value change, then perceptions of partner value will also change, which will in turn affect perceptions of the value (quality) of the current relationship. Take for example, Daniel who is in a relationship with Agnus. Daniel is satisfied with the relationship because Agnus is close to his ideal partner. Daniel's ideal partner is in part a reflection of his self-perceived mate value. Then one day Daniel receives information that his mate value has increased – he receives multiple propositions from physically attractive women. Daniel's ideal partner (internal representation) alters towards someone who is more attractive, given that he perceives he now has more to offer in this domain, and thus, has more mate value. Accordingly, there is now a larger discrepancy between Daniel's ideal partner and his actual partner. This larger

discrepancy should cause Daniel to now perceive his current relationship as less valuable given the alternatives available; hence, perceived relationship quality should decrease.

It is plausible that if mating sociometers exist, that this adaptive psychological mechanism would still be accessible after aspirations have already been set and a mate selected. The mating sociometer would come online again, for example, if a change in the environment required a reassessment of mate value. Examples might include a relationship suffering problems or some indication that current mate value (of self or partner) has changed. If current self-perceived mate value has changed, so have the costs and benefits associated with a current relationship – a potential problem requiring a solution. In a current relationship the purpose of the mating sociometer would be therefore to track one's current self-perceived mating status (as reflected by propositions and rejections) and, thus, help calibrate evaluations and perceptions of the current mating relationship. If the discrepancy between the partner or relationship ideal and the perceived reality becomes larger, this might motivate a person to seek a relationship closer to his or her ideal standards.



## **Chapter 2: Sociometer Theory, Research, and Mating Relationships**

The aims of this chapter are to give an overview of the research supporting sociometer theory to date and cover the research on self-esteem in mating relationships. The remainder of the chapter will focus on integrating the research findings to give an overview and rationale for the current studies in this thesis.

### **Sociometer Research**

In the original sociometer research article, Leary et al. (1995) demonstrated converging evidence for sociometer theory by demonstrating links between perceived social exclusion and state self-esteem. This research and the subsequent theoretical chapter (Leary & Downs, 1995) were the platform for the launch of sociometer theory. Since its initial conceptualisation, a mounting body of research has supported a sociometer theory account of self-esteem.

A core premise of sociometer theory contends there is an innate need for humans to belong. Ostracism, a form of exclusion, has been shown to have an impact on both self-esteem and belongingness (Sommer, Williams, Ciarocco, & Baumeister, 2001; Williams, Cheung, & Choi, 2000). Sommer et al. (2001) reported a negative correlation between self-esteem and exposure to ostracism with lower self-esteem being associated with more experiences of being ostracised. Furthermore, Williams et al. (2000), in a computer simulated paradigm, manipulated the quantity of ostracism experienced by participants and reported that higher levels of ostracism resulted in lower levels of perceived belongingness and self-esteem. In a related study Pickett, Gardner, and Knowles (2004) demonstrated that individuals who have a high need to belong—social connectedness—have been shown to be more sensitive and accurate in

detecting and interpreting social cues. In addition, Gailliot and Baumeister (2007) have recently shown that belongingness is positively and uniquely associated with self-esteem.

Another premise of sociometer theory is that state self-esteem acts as an early warning system alerting the individual to changes in the social environment before exclusion takes place. Sommer and Baumeister (2002) have established that people with lower trait self-esteem are more sensitive to changes in the social environment. In addition, people with lower trait self-esteem are less likely to join a new social group unless acceptance is guaranteed, whereas people with high self-esteem will join regardless of whether acceptance is guaranteed or not (Anthony, Wood, & Holmes, 2007). These two studies complement Leary et al.'s (1995) earlier findings that people with lower trait self-esteem are more sensitive to negative feedback, possibly based on previous exclusion experiences.

Other studies have found that positive regard and acceptance by others is associated with higher levels of self-esteem (Buckley, Winkel, & Leary, 2004; Leary, Cottrell, & Phillips, 2001; Leary et al., 2003; Lemay & Ashmore, 2006; Srivastava & Beer, 2005), even for people who claim that acceptance by others is not important to them (Leary et al., 2003; Lemay & Ashmore, 2006). Anthony, Holmes, and Wood (2007) investigated what interpersonal aspects were more salient in terms of influencing self-esteem. They found that people were more attuned to feedback reflecting social commodities (i.e., superficial traits such as physical attractiveness, popularity, and social skills), as opposed to communal qualities (i.e., personality traits such as kindness, warmth, responsiveness, and honesty). Together this research suggests that evaluations by others are extremely important in influencing state self-

esteem and as suggested by Leary et al. (1995) these short-term fluctuations in state self-esteem eventually build into long-term trait self-esteem.

The pattern and type of acceptance or rejection also play important roles in influencing self-esteem in addition to the crucial factor of the status and familiarity of the individual supplying the feedback. Buckley et al. (2004) investigated how a pattern of constant versus increasing acceptance or rejection influences self-esteem. They reported that constant acceptance led to higher increases in self-esteem as compared to increasing acceptance, and constant rejection led to lower levels of self-esteem as compared to increasing rejection.

Dominance and acceptance within a group, independent of each other, are also associated with higher levels of self-esteem (Leary et al., 2001). Although dominance within a group (which presupposes acceptance) is important, Leary et al. (2001) also found that perceived acceptance within a group accounted for substantially more variance in trait self-esteem than perceived dominance. Furthermore, Snapp and Leary (2001) demonstrated a moderating effect of rejection on state self-esteem for a newly met person. That is, rejection versus acceptance from someone who is less familiar with you, results in lower self-esteem as compared to someone more familiar. However, there was no difference in self-esteem for those who were accepted or rejected when this was done by someone who was more familiar with the participant (Snapp & Leary, 2001). The level of familiarity, thus, moderated the effect of acceptance and rejection on self-esteem.

State self-esteem has also been shown to be most sensitive to rejection when the others' evaluations are ambivalent (Leary, Haupt, Strausser, & Chokel, 1998) and when it is accompanied by having one's worldview validated (Gailliot & Baumeister, 2007). Finally, consistent with Leary's (1990; 2003) original observations regarding

the association between social anxiety and self-esteem, Gailliot and Baumeister (2007) demonstrated that social anxiety moderates the effects of rejection on self-esteem. They reported a main effect of social anxiety, and a three-way interaction between social anxiety (high/low), having one's worldview validate/invalidated, and belongingness (accepted/rejected). Higher social anxiety was generally associated with lower self-esteem. However, this was more prominent when combined with rejection and having one's worldview validated (Gailliot & Baumeister, 2007).

As sociometer theory presupposes an innate need to belong and form relationships with others, it is plausible that attachment working models or styles play an important role in the way they interact with self-esteem. Srivastava and Beer (2005) found that reactions to acceptance and rejection varied as a function of people's attachment styles. They found that more insecure attachment styles predicted lower self-esteem, and that people with more anxious attachment styles were more reactive to both acceptance and rejection (i.e., more reactive sociometers). Similarly, Carnelley, Israel, and Brennan (2007), extending Srivastava and Beer's (2005) work, reported that changes in self-esteem were dependent on attachment style, when reacting to negative feedback from an intimate partner. That is, lower self-esteem was associated with negative feedback from an intimate partner for those higher in attachment anxiety (Carnelley et al., 2007).

The final proposed function of a sociometer, after social exclusion or rejection is detected, is to motivate behaviour change so that the exclusionary threat can be dealt with. Along those lines, Williams et al. (2000) found that after being ostracised, participants attempted to counteract the threat to belongingness by conforming to a new group, thus re-establishing a sense of belonging.

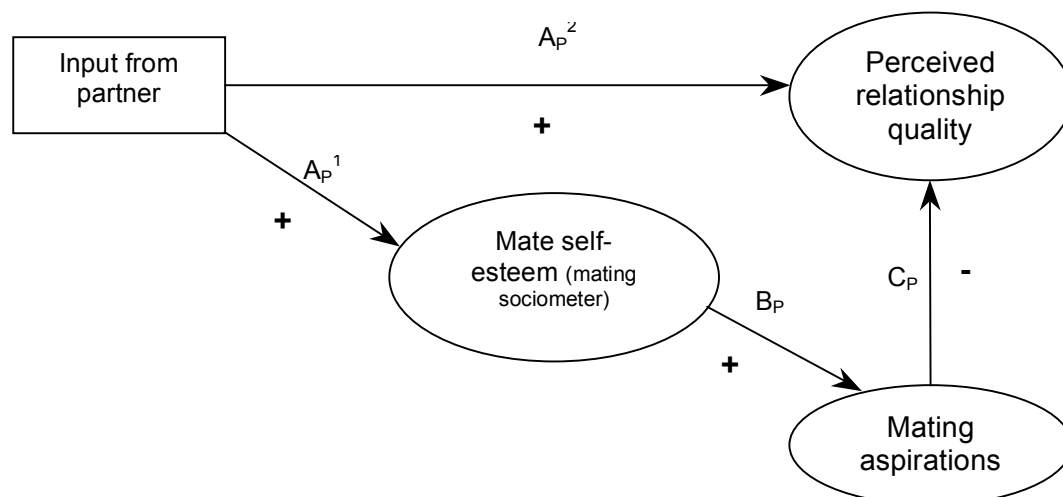
The research investigating the associations between self-esteem and various aspects of social inclusion and belongingness, as outlined above, generally supports the sociometer model of self-esteem. People are sensitive to their social environments, and the degree of inclusion or belonging experienced, and this sensitivity is reflected in levels of state (and trait) self-esteem. Self-esteem is therefore inextricably linked to the degree to which we are socially included or excluded, especially by those who we are connected with strongly or identify with. Moreover, after inclusionary status has been threatened people take behavioural action to counteract the threat, including withdrawal and seeking another group.

### **Self-Esteem and Relationships**

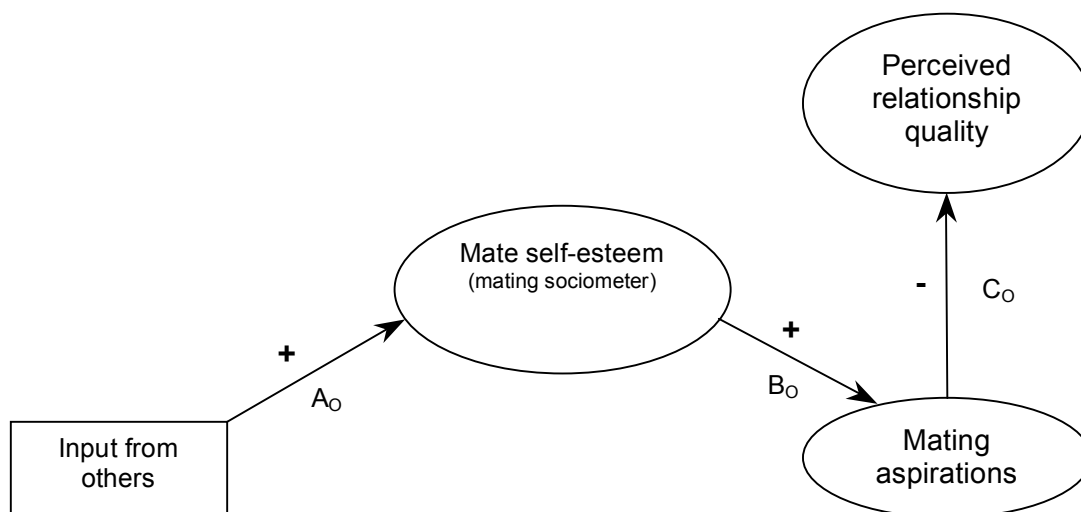
Despite the huge amount of research on self-esteem, and the immense amount of research investigating all aspects of intimate relationships, there is comparatively limited research examining causal associations between the two. As outlined in Chapter 1, there are three stages of a mating relationship – the development of mate aspirations, selection, and retention. To review the literature in these areas in association with self-esteem, keyword searches were conducted in two databases (PsycINFO and Web of Science). Separate searches were conducted with self-esteem combined with each of the following search terms: mating, mate selection, mate aspiration(s), mate preferences, relationship(s), relationship satisfaction, relationship commitment, and relationship quality. Although the searches generated more than 1200 articles published in peer-reviewed journals, closer inspection revealed very few articles examining the associations between self-esteem and aspects of mating. The majority of the research investigated a third causal variable such as erectile dysfunction and its impact on relationship satisfaction and self-esteem (for example,

Althof et al., 2006). There were no articles specifically examining the associations between state self-esteem and either mate aspirations (by any definition) or mate selection. There were, however, several studies investigating the associations between trait self-esteem and intimate relationship satisfaction and quality.

As proposed earlier, sociometer theory predicts that if a mating sociometer detects relevant changes in inclusionary mate status this should alter mating strategy cognitions and behaviours. For people in a current relationship, this would involve simultaneously tracking inclusionary status both within the current relationship (how the partner views the self) and within the mating market place (how others, apart from the partner view the self). Positive changes in inclusionary status, regardless of the source, should lead to increases in (mating) state self-esteem. This in turn should be interpreted in terms as increased aspirations (all being equal). However, the resulting mating strategies or cognitions (e.g., commitment to current relationship) should vary as a function of the source of such changes in inclusionary status. Figure 1 and Figure 2 explain my reasoning on this topic.



**Figure 1: Diagram depicting the influence of mating inclusion from a current intimate partner on mating aspirations perceived and perceived relationship quality.**



**Figure 2: Diagram depicting the influence of mating inclusion from outside the relationship on mating aspirations and perceived relationship quality.**

Figure 1 shows that when the target receives inclusionary input from an intimate relationship partner (e.g., telling the partner how attractive or kind he/she is) this should increase state self-esteem (Path  $A_p^2$ ), subsequently leading to higher mate aspirations and to a lowering of commitment. However, this feedback will also be likely to render the target more secure in the relationship, more bonded to the partner, and also perhaps increase the positivity of the (cognitive) partner model held by the target. There is, in fact, a good deal of research testifying to the positive impact that such feedback (or perceived feedback) has on the levels of commitment and satisfaction of the target (see, for example, Murray, Griffin, Rose, & Bellavia, 2006; Overall, Fletcher, & Simpson, 2006). This direct effect of positive feedback on the partner is likely to buffer and counter the negative implications from the increase sustained in mate aspirations.

Now consider the scenario encapsulated in Figure 2. This example shows that if the increase in self-perceptions in mate value is produced as a function of a feedback from sources outside the relationship (for example, an attractive person at a party indicating his or her romantic interest and belief the target is a catch), then this

is likely to produce lower levels of commitment to the target's current relationship. The reason is simply that in this case there is no countervailing source of bolstering communication for the partner.

No research has specifically tested the model shown in Figure 2. However, some research does provide supporting evidence for this account. Crawford, Feng, Fischer, and Diana (2003) found strong negative associations between commitment and perceived relationship alternatives. Consistent with Crawford et al. (2003), Niehuis (2005) found that levels of commitment, ambivalence about a partner and their relationship and ease of finding an alternative partner were significant predictors of monitoring for relationship alternatives. Furthermore, men who are exposed to higher status males, and women who are exposed to highly attractive females, experienced a lowering in their self-perceived mate value (Gutierrez et al., 1999). Kenrick et al. (1994) exposed people currently in a relationship to opposite-sex targets who were ostensibly part of a dating service program being trialled at a university and asked to them evaluate the profiles. After this evaluation, people then rated their current relationships. They reported that exposure to attractive females for men, and high dominance males for women, lowered attraction to their current romantic partner (Kenrick et al., 1994). In general, this research demonstrates that both self-perceived mate value and relationship satisfaction are malleable, and can be influenced by exposure to either the mating competition or ostensibly available alternative mating partners.

According to Sociometer theory, trait self-esteem is calibrated by experiencing relatively consistent levels [from feedback] of state self-esteem (Hill & Buss, 2006). Indeed, there is typically a moderate to strong correlation between state and trait self-esteem (Haupt & Leary, 1997; Leary, 1999b; Leary et al., 1998) with Leary et al.



(2001) reporting a correlation of .71 between the state self-esteem scale used in this thesis and a global measure of trait self (the Rosenberg Self-Esteem Inventory; Rosenberg, 1965). Levels of trait self-esteem in the context of an intimate relationship that is stable can be considered as representing an idling mating sociometer (a sociometer at rest). Associations between trait self-esteem and intimate relationship processes should therefore offer insights into the role played by a mating sociometer in relationships.

Trait self-esteem has been reported as positively associated with a) relationship satisfaction (Aune & Wong, 2002; Cramer, 2003a; 2003b; Lemay, Clark, & Feeney, 2007; Murray, Holmes, & Griffin, 2000; Murray, Holmes, Griffin, Bellavia, & Rose, 2001; Shackelford, 2001; Voss, Markiewicz, & Doyle, 1999), b) playfulness within a relationship (Aune & Wong, 2002), c) sexual satisfaction within a relationship (Barnett & Nietzel, 1979), d) acceptance in a relationship (Cramer, 2003a), e) perceived regard in a relationship (Murray et al., 2000), and f) marital adjustment (Voss et al., 1999). Trait self-esteem has also been found to be negatively associated with a) need for approval within a romantic relationship (Cramer, 2003a), b) misperceptions of partner's mood and intentions (Bellavia & Murray, 2003), c) anxiety about partner acceptance, d) sensitivity to threats (Murray, Rose, Bellavia, Holmes, & Kusche, 2002), e) insecurities about partner's positive regard (Murray et al., 2005), and f) need for affiliation (Rudich & Vallacher, 1999). These findings are broadly consistent with sociometer theory. That is, higher trait self-esteem is associated with being included and valued in relationships and with relationship security.

### **Theoretical Summary**

The current research has its foundations in evolutionary psychology and sociometer theory. To summarise the prior discussion, it brings together evolutionary conceptualisations and research in the areas of mating, interpersonal processes, and self-esteem. Evolutionary psychology provides an explanatory framework for conceptualising and explaining human behaviour and cognition. For a theory to fit within an evolutionary psychology framework it needs to fulfil the requirements of addressing the three key premises of domain specificity, numerousness, and functionality (Buss, 1995; Larsen & Buss, 2005). An evolutionary psychology account of human mating strategies assumes that there are evolved specific psychological mechanisms that solve the adaptive problems associated with mating such as intra- and inter- sex competition. There are at least three key phases involved with human mating behaviour: setting mating aspirations, selecting a mate, and retaining a mate. Each of these three phases provides its own unique adaptive problems requiring solutions.

To continue the summary of the theoretical foundation, sociometer theory as originally proposed by Leary and colleagues (1995; 1995) is an evolutionary-based psychological model that conceptualises state self-esteem as a gauge of interpersonal processes. That is, changes in state self-esteem are reflective of changes in social inclusionary status. Kirkpatrick and Ellis (2001) expanded Leary and colleagues (1995; 1995) model to make it more consistent with evolutionary psychology premises, by proposing a domain specific sociometer model and relating it to key human adaptive problems such as mating. Although Kirkpatrick and Ellis (2001) did not identify all possible situations in which a domain specific sociometer might be invoked, they did suggest that key areas such as mating relationships and coalitional

relationships would be important when tracking inclusionary status and crucial for human survival.

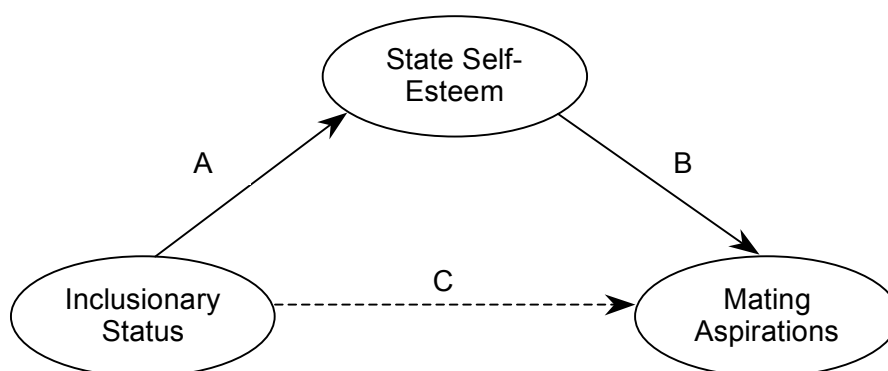
There is mounting evidence in support of Leary and colleagues' (1995; 1995) sociometer account of self-esteem, although no one has specifically tested the domain specificity model proposed by Kirkpatrick and Ellis (2001). Predictions derived from this model suggest that changes to inclusionary status in one domain should only result in compensatory behaviour or cognition to re-establish inclusionary status within that domain and not typically influence behaviours across domains. For example, threats to mating inclusionary status should result in changes to mating behaviour strategies, but not influence behaviours or associated plans or intentions associated with coalitional relationships.

### **Current Research**

The current research was specifically designed to test the domain specificity sociometer model outlined by Kirkpatrick and Ellis (2001) with regard to mating relationships. The aim was to manipulate mating self-esteem, thus invoking the mating sociometer, and then measure the outcomes in terms of either mating aspirations or perceptions of relationship quality in existing sexual relationships. In keeping with sociometer theory, it was expected that manipulating inclusionary status in the mating domain would affect self-esteem and that these changes would result in other cognitive changes. As a critical test of domain specificity, we also tested the extent to which such changes would be specific to the sexual relationship domain, rather than leaking over into the general interpersonal realm.

### **Study 1**

Study 1 intended to test some of the key tenants of sociometer theory as well as to test the domain specificity of sociometers in the mating domain. Figure 3 shows the proposed causal pathways predicted by the domain specific sociometer model of self-esteem for people who are single (i.e., in the process of possible mate selection). Changes in mating inclusionary status should result in changes in state self-esteem (Path A) and indirectly in changes to mating aspirations (Path C). Specifically, being rejected (compared to accepted) should reduce levels of state self-esteem, which should, in turn, lower mating aspirations.

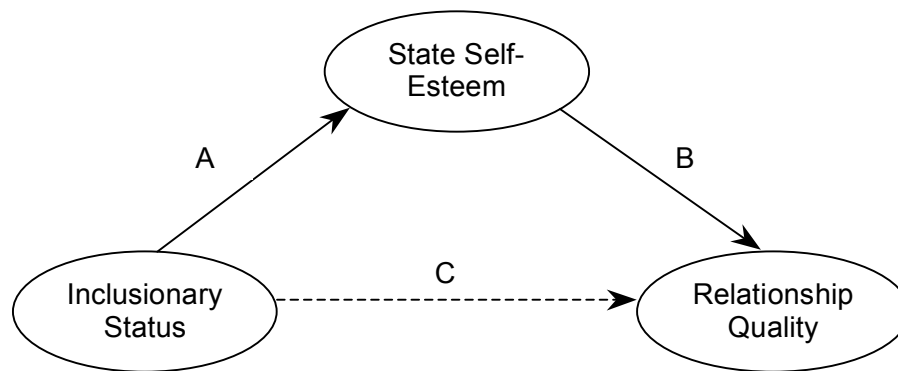


**Figure 3: Proposed mediational model of state self-esteem on mating aspirations.**

### **Study 2**

Study 2 was designed to extend Study 1 by examining another area of mating—perceptions of relationship quality—as a function of exclusion or inclusion. Although this particular causal pathway was not originally predicted by Kirkpatrick and Ellis (2001), it is consistent with sociometer and the current research on self-esteem, mating alternatives, and relationship commitment and satisfaction, as previously described.

Figure 4 shows the proposed causal pathways predicted. Changes in mating inclusionary status (specifically from outside the relationship – see Figure 2) should produce changes in state self-esteem (Path A) and indirectly in changes in relationship quality (Path C). That is, inclusion will result in increased self-esteem and lower perceived relationship quality. Increases in self-esteem should thus mediate the link between inclusionary status and relationship quality. Increases in self-esteem should thus mediate the link between inclusionary status and relationship quality.



**Figure 4: Proposed mediational model of state self-esteem on relationship quality.**

## Chapter 3: Study 1

### Social Exclusion, Self-esteem, & Aspiration levels

From an evolutionary perspective, when seeking potential mating relationships, individuals need to be able to adaptively calibrate their levels of aspiration. That is, people face the adaptive problem of how high or low to set their sights [aspirations] for a potential mate. There is a cost-benefit trade-off built into mating relationships (Gangestad & Simpson, 2000) with a minimal level of ideal standards people are willing to accept in a potential mating relationship (Fletcher, Simpson, & Thomas, 2000a; Fletcher et al., 1999; Simpson et al., 2001). In short, people want a mate of the highest potential value, with the least cost associated, which in turn conforms to their own ideal standards. Natural selection should act against pursuing a potential mate if the cost is greater than the benefit. For example, it would not be adaptive for people to waste time and resources (costs) pursuing mating relationships that are higher in value (benefits) than they can realistically obtain, having set their aspirations too high. Conversely, it would not be adaptive for people to waste time and resources pursuing a mating relationship in which they would contribute more than they would receive in return, having set their aspirations too low. Therefore, as reviewed earlier, Kirkpatrick and Ellis (2001; 2004; 2006) have proposed that an important function of state self-esteem is to guide individuals to approach potential mating relationships that are of relatively high quality yet defensible given one's own mating value.

According to Kirkpatrick and Ellis's sociometer model (2001; 2004; 2006), experiences of social exclusion and inclusion feed into domain specific sociometers, resulting in changes of state self-esteem in the *relevant* social domain. This in turn

affects aspiration levels in approaching new relationships in that domain. For example, people who experience a series of rejections [exclusions] from attractive members of the opposite-sex should experience a decrease in mating self-esteem, in turn leading them to lower their aspiration levels in selecting mates. On the other hand, a spate of interest [inclusions] from moderately or very attractive members of the opposite-sex should increase individuals' mating self-esteem and cause them to raise their mating aspirations. Similar processes are proposed to operate in other relationship domains, such as friendships and professional relationships; importantly however, the changes in aspirations should only occur in the domain relevant to the detected increase or decrease in value. It would not be adaptive to have global changes across all social domains when an individual's value has only changed in one domain.

This model was tested in the current study by using a carefully controlled social exclusion-inclusion manipulation and by conducting a test of domain-specificity on the effects of this manipulation on aspiration levels and investment. Males and females took part in a simulated interaction paradigm, based on Simpson, Gangestad, Christensen, and Leck (1999), in which participants were exposed to digitally pre-recorded questions from confederates. This interaction acted as precursor to receiving the social exclusion-inclusion manipulation – it set the scene. Participants answered questions, designed to elicit the sharing of personal information, from the ostensibly live interviewers (pre-recorded confederates). Following the simulated interview, participants received bogus information regarding their mating value based on the information they provided during the interview process. The three interviewers ostensibly supplied this feedback. This feedback acted as the social exclusion-inclusion manipulation designed to alter participants'

perceived mating status, as reflected by changes in state self-esteem. Participants' state self-esteem was measured both before and after experiencing the manipulation. Utilising this type of pre-recorded, stimulated paradigm allowed for standardisation of confederate behaviour across participants, measurement and control of interview length, and measurement and control of variation in participants' ratings of the attractiveness of confederates.

To test for domain-specificity, as suggested by the Kirkpatrick's and Ellis's (2001; 2004; 2006) sociometer model, participants completed dependent measures from different domains; namely, mating aspirations, friendship aspirations, and friendship investment. Statistical analyses were then used to test the effects of the manipulation to test for domain-specificity of the social exclusion-inclusion manipulation, and to determine if mediation was present.

In summary, the current study tests Kirkpatrick's and Ellis's (2001; 2004; 2006) theoretical model. Specifically, the following three predictions were tested: 1) social exclusion by members of the opposite-sex causes individuals to lower their mating aspirations compared to social inclusion, 2) the causal link between social exclusion versus inclusion and mating aspirations is mediated by decreases in state self-esteem; 3) social exclusion versus inclusion by members of opposite sex does not influence either same-sex friendship aspirations or investment in current same-sex friendships.

## **Method**

### **Participants**

Eighty-three participants (41 males, 42 females) were recruited from the University of Canterbury through recruitment posters and emails to various



undergraduate courses. The mean age of participants was 19.39 years ( $SD = 2.09$  years). Ninety-two percent of the participants identified themselves as being of European origin, with the remainder predominantly Asian. To increase the relevance of the mate selection exercise, participants were only included in the study if they were not currently in an intimate relationship. Participants each received a voucher for \$7.00 for a campus café.

### **Measures & Forms**

***Pre-experimental screening and recruitment questionnaire:*** An electronic recruitment/screening form sent as an attachment to potential participants. This form contained the State Self-Esteem and Social Inclusion Scale (see below) and contact details for recruitment purposes, constructed in a Microsoft Excel spreadsheet so that potential participants could fill out in privacy and send back as an attachment in an email.

***State self-esteem and social inclusion scale (SE-SI):*** This measure of global state self-esteem contains eleven items measuring general state self-esteem with an additional four items designed to measure social inclusion. This was redesigned from a previously adapted version of McFarland's and Ross's (1982) Resultant Self-Esteem Scale (Bennison, 2002; Kavanagh, 2002; Leary et al., 1995; Robins, 2002). Participants rated themselves on a 7-point bipolar adjective scale with half the items reverse scored to prevent acquiescence. The adjectives used to measure state self-esteem were: good, competent, adequate, useless, inferior, smart, unconfident, worthless, important, effective, and unsatisfied, each paired with its opposite. The adjectives used to measure social inclusion were: socially attractive, popular, accepted, and disliked, each also paired with its opposite. Both subscales produced

good internal reliabilities and were averaged to produce scores for state self-esteem and social inclusion for pre and post times (Table 1). Consistent with sociometer theory, the measures of state self-esteem and social inclusion were strongly associated (Table 2) and were therefore averaged to form a composite of overall pre and post manipulation self-esteem (pre-SE, post-SE).

***Date rating form:*** A 5-item form ostensibly rated by the interviewers on a 3-point scale ('yes', 'no' or 'unsure') was given back to participants (see Robins, 2002). The five items ostensibly rated were: "Would you want to continue a conversation with the person? Would you want to introduce this person to a friend? Would you be interested in having a coffee with this person? Would you be interested in going on a date with this person? Does this seem like the kind of person who you would be interested in forming a dating relationship with?" This form served as the social exclusion-inclusion manipulation.

***Interview evaluation form:*** A 7-item questionnaire that asked participants to rate the interview process (4 items) and attractiveness (3 items) of the interviewers. The four items assessing participants' perspectives of the interview process were: "The questions were too personal; I liked the questions that were asked; I thought the questions were relevant to assessing potential dating partners; and, I provided enough information during the interview for someone to form a valid impression of my personality"—rated on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Instructions for the scale were: "Please rate the following statements about the interview process that you have just been through by circling the number that best applies." Each item was used as an independent measure of participants' perspectives on the interview process, similar to Simpson et al. (1999). Ratings of interviewer

attractiveness were on a 7-point scale (1 = Unattractive, 7 = Attractive), with the instructions: “please rate how attractive you found the interviewers.”

***Demographics questionnaire:*** Questions about gender, age, ethnicity, and relationship status.

***Friendship investment questionnaire:*** A revised 15-item version of the Friendship Questionnaire as used by Kavanagh (2002) was designed to measure individuals’ willingness to invest in a current same-sex friendship. Participants initially indicated whom they were rating (acquaintance, good friend, best friend), with the remaining 14 items rated on a 7-point scale (1 = not at all likely, 7 = extremely likely; Appendix A). Reliability analyses indicated that that 14-item measure demonstrated good internal consistency ( $\alpha = .83$ ), and was therefore averaged to form a global measure of friendship investment, with higher scores indicating higher friendship investment.

***Feedback evaluation forms:*** A three-item measure with two items designed as a manipulation check, and one item assessing participants’ level of suspicion. The two manipulation check items were: “Overall, how positively was your information regarded? Overall, how accepting were the other people of you?” (Both rated on 7-point scales, with higher scores indicating greater positivity or acceptance.) The suspicion item was: “Did you believe that the other people were the ones who completed those ratings that you received?” (yes/no).

### **Electronic Equipment**

***Stimulus material.*** Two digital video discs (DVDs) were created (one with 3 male interviewers and one with 3 female interviewers) as stimulus material for the video interview, adapted from a procedure used by Simpson et al. (1999), designed

so that participants would believe they were taking part in a live video interview with three other people. The interviewers asked moderately disclosing personal questions (Appendix B).

The video footage started with a blank screen with the researcher asking if the three interviewers were ready – with the interviewers responding in the affirmative. Next, a wide-angle shot appeared on screen showing the three interviewers sitting at a row of desks. The shot then panned to a headshot of Interview 1 asking his/her first question. Immediately following, there was a blank screen shot built in (which stayed blank while the participant responded to the question); next there was a shot of an Interviewer replying in a neutral tone, thanking the participant for their answer. The process repeated for Interviewers 2 and 3 – with a maximum of 21 questions in total available (7 questions from each interviewer). The DVD ended with Interviewer 3 indicating after the last question that they [the interviewers] had enough information. The design and construction of the DVD enabled the researcher to control the timing of each segment (questions, blank screen, and acknowledgement of answers) in a manner that would create the illusion for participants that they were interacting with three other live people in real time.

***Mating aspirations program.*** A computer program (as constructed and used by Robins, 2002) was used to assess mating aspirations. The program contained 18 (9 male, 9 female) photographs of opposite-sex individuals with accompanying personality profiles depicting individuals of high, moderate, or low mate value (social/physical attractiveness), as indicated by the social information and accompanying photographs (see Appendix C for photographs). The moderate and low mate profiles were used as filler profiles, with the high mate value profile as the main dependent variable. Following the presentation of each profile, participants answered

five questions designed to assess how well matched they felt they were to the target person: “Realistically, does this seem like the kind of person you would form a dating relationship with? How well matched are you to this person? How comfortable do you think you would be dating this person? Does this seem like the kind of person who you would successfully date? How likely do you think it is that this person would be interested in you?” The questions were responded to on 7-point scales (1 = definitely not, 7 = definitely yes) (Robins, 2002). The 5-items for each of the 6 high mate value profiles demonstrated excellent internal reliability ( $\alpha$ s > .88, see Table 3), and were therefore averaged to create composite measures of perceived mating compatibility with each of the high value profiles – a reflection of mating aspirations.<sup>1</sup>

***Friendship aspirations program.*** A computer program (as constructed and used by Bennison, 2002) was used to assess friendship aspirations. The program is identical to the mating aspirations program (using the same sets of photographs and personality descriptions), except that participants view same-sex rather than opposite-sex target profiles and answer questions about perceived compatibility with the targets in terms of friendship potential rather than mating potential. Following the presentation of each profile, participants answer four questions designed to assess how well they are match to the target person: “Realistically, does this seem like the type of person you would form a friendship with? Does this seem like the type of person you would feel comfortable interacting with? Does this seem like the kind of person who would be interested in developing a friendship with you?” The questions were responded to on 7-point scales (1 = not at all, 7 = definitely) (Bennison, 2002). The 4-items for each of the 6 high friendship value profiles demonstrated excellent

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<sup>1</sup> The 5-items for each of the moderate value and low value mating profiles also demonstrated good internal reliability ( $\alpha$ s > .84).

internal reliability ( $\alpha s > .88$ , see Table 4), and were therefore averaged to create composite measures of perceived friendship compatibility with each of the high value profiles – a reflection of friendship aspirations.<sup>2</sup>

### **Experimental Laboratory Environment**

The experimental lab was set up so that participants sat at a desk facing a television (TV) monitor and video camera on a movable trolley – with the monitor and camera visibly turned off (i.e., it was obvious that they were not currently working). Both the camera and monitor had leads ostensibly going to plugs in the wall behind; however, they were not actually connected to anything. The camera on the trolley was used as a decoy to avoid participants detecting the real camera—the informed consent form stated that parts of the study would be videotaped, but did not specify which parts. Directly behind the decoy camera, in line of sight, hidden in a bookcase was a working digital camera, with the TV and decoy camera positioned so that when participants looked at the decoy camera they inadvertently looked straight into the hidden camera. There was a button microphone embedded in the ceiling directly above the participants' chair for audio recording.

### **Procedure**

***Phase 1: Recruitment and baseline measures.*** At the time of recruitment, approximately 4 weeks before participating in the main study, participants completed the pre-experimental recruitment and screening questionnaire, containing the 15-item self-esteem and social inclusion measures (sent as an electronic attachment). Participants completed the electronic form and then sent it back to the researcher as

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<sup>2</sup> The 4-items for each of the moderate value and low value friendship profiles also demonstrated good internal reliability ( $\alpha s > .84$ ).

an attachment. The measure provided a pre-manipulation assessment of current state self-esteem in a neutral context. Participants were then contacted by phone to be booked in for a time to participate. During the booking process, participants were screened for name recognition of the confederates appearing on the stimulus DVDs and primed to think that they were taking part in two separate studies interacting with 3 other real people. Participants were then booked in and given instructions on where to attend the study.

***Phase 2: Experimental manipulation.*** The researcher used random assignment to allocate 41 participants to the social inclusion group (20 males, 21 females), and 42 participants to the social exclusion group (21 males, 21 females). Participants reported at staggered intervals to the waiting area and participated one at a time in the study. Participants gave informed consent, following a generic explanation of the study: that they would be taking part in two separate studies, 1) to examine how people use personal information to choose potential dates; and 2) to create personality profile matches for a dating agency.

Upon entering the experimental lab, participants were administered a questionnaire packet containing various personality measures, the results of which are not reported here<sup>3</sup>. The intention of sitting in the lab and completing questionnaires was to produce uniformity of experience across participants before the manipulation. The researcher monitored participants' progress in completing the questionnaire packet through the hidden camera, and when it appeared that a participant was

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<sup>3</sup> Additional variables measured did not significantly contribute to the results and were not reported in full in the results section to save space due to their null associations. Specifically, the following were not significantly associated with the final outcomes and did not mediate or moderate any of the effects of the social exclusion manipulation on any of the DVs: mood (post manipulation), narcissism, trait self-esteem, openness, agreeableness, conscientiousness, extraversion, neuroticism or self-perceived mate value (pre manipulation).

approximately 5 minutes from completion, the researcher ostensibly ‘checked’ their progress. At this point, the researcher re-entered the room and informed participants that he was going to check on the other people that they would be interacting with in the study. The researcher then walked loudly down the hallway and loitered for approximately 5 minutes before returning to rejoin the participant in the lab informing them that three other people in the study (actually pre-recorded confederates on DVD) were going to ask them some questions as part of the study. The following experimental script, adapted from Simpson et al. (1999), was read to the participant:

*“OK, now for the interaction part of the study. Now, professor Garth Fletcher here in the department, he’s like the relationship guy. He’s been asked to develop a program that looks at different personalities and compatibility for partners etc. However, before we run the program properly, what we’d like to do is get some feedback from people as to how appropriate and applicable the questions are that are being asked. Sort of like a process issue.”*

*“So, in another room we have three guys/girls also participating in the study. They’re going to ask you some questions. What we’re interested in is your response to their questions, how they use your answers to form impressions, and your feedback about the process.”*

*“Now the way it’s going to work, so it’s a little less aversive than being in the same room as them, is via video link. So, the interviewers or the guys/girls will appear on the monitor here in front of you [researcher points] and will be able to see and hear you through the camera next to it.” [researcher points to the decoy camera]*

*“Each guy/girl will appear on the screen one at a time and ask you one question. Now the screen will go blank between each question so that you can answer without distraction. I just basically cut the feed to the TV, but the camera will still be running all the time. There’s sort of two reasons for this, 1) so you don’t feel like the guys/girls are staring at you while you are answering the questions, even though they will be able to see you, and 2) so that they can discuss anything they may need to discuss without you hearing about it.”*

*“So, after you’ve answered the question the next interviewer will come on and so on until they feel that they have enough information to make the decisions that*



*they've been asked to make. Basically, they decide when to end the interview process, which is why they need to discuss stuff without you hearing about it."*

*"Now for this part of the study, the guys/girls have been told not to answer any questions from you, and to only ask each question once. So, you'll need to pay careful attention. We'll start in a couple of minute's time. I'll be next door coordinating the video feed between the two rooms."*

The researcher then made it obviously noticeable that he was turning on the monitor and [decoy] camera and then left the room. Approximately 1 minute later the stimulus DVD started.

The goal was to expose each participant to a 6-minute interview process, and to have the participant respond to the same number of questions from each interviewer. To achieve this, participants answered interview questions until approximately 5 minutes of time elapsed. If at that time the participant was answering questions from either Interviewers 1 or 2, the interview process finished after responding to the next question from Interview 3. If at 5 minutes, participants were responding to a question from Interviewer 3, then the researcher administered another round of three questions and the interview process ended after that. The median interview length ended up at 6:14 minutes ( $M = 6:15$ ,  $SD = 0:47$ ) with the median number of questions answered being 12 ( $M = 11.39$ ,  $SD = 2.42$ ).

Upon completion of the interview process, the researcher re-entered the lab carrying a bundle of vouchers, receipt book, and photos of the interviewers. Participants received the photos of the interviewers and Interview Evaluation Form (part of the cover story), asking them to rate the interview process and attractiveness of each interviewer (1 = unattractive, 7 = attractive) and the researcher made it obvious he was turning off the TV monitor and decoy video camera for participant [ostensible] privacy. The three male interviewers received mean attractiveness ratings

of 5.07 ( $SD = 0.97$ ), 4.71 ( $SD = 1.18$ ), and 5.26 ( $SD = 0.96$ ) while the 3 female interviewers received mean attractiveness ratings of 4.44 ( $SD = 1.16$ ), 5.15 ( $SD = 1.01$ ), and 5.45 ( $SD = 1.00$ ) respectively. Participants therefore perceived the opposite-sex interviewers as average to above average in attractiveness. The researcher then informed participants that he was leaving to give the interviewers their participant incentives and let them go, as they had fulfilled their requirements for the study. The researcher returned approximately 3 minutes later carrying Dating Feedback Forms ostensibly from the interviewers.

Upon re-entering the room, the researcher collected the completed forms and informed the participant that the first study was complete and they would now start the second study. Participants then received three Dating Feedback Forms (placed underneath the Information Sheet and Consent Form for the second part of the study; ostensibly completed by the interviewers), with the explanation, that ethics required that they have the opportunity to view all personal information about them, and be given the opportunity to see interviewers' ratings of them. The Dating Feedback Forms had bogus answers circled, indicating 'yes', 'unsure' or 'no'. This served as the social exclusion-inclusion manipulation. Participants in the social inclusion condition received predominantly 'yes' responses with a few 'unsures'. To minimise the aversiveness of the manipulation, and to render it more realistic, participants in the social exclusion condition received predominantly 'unsure' responses with a few 'no' answers. Ambivalent and uncertain response have been suggested by Leary et al. (1995) as being sufficient for indicating social exclusion. The researcher then left the room, re-entering once participants has indicated via intercom that they were ready to proceed with the second study. During this time, participants were still being

clandestinely videoed. All participants examined the Dating Feedback Forms, during this period.

***Phase 3: Measurement of dependent variables.***

***a) State self-esteem and social inclusion.*** The researcher returned approximately 2 minutes later and informed participants that they would now begin the second study examining how individuals make decisions about relationships—both romantic relationships and friendships. Participants then received the demographics questionnaire (to keep with the ‘two separate studies’ cover story), and SE-SI and informed that as a matter of course, some more personality scores would be collected from them. The SE-SI served as a post-manipulation measure of state self-esteem. Participants completed the forms in private.

***b) Mating aspirations, friendship aspirations, and friendship investment.***

Before leaving the room, the researcher gave participants instructions for starting the mating and friendship aspirations tasks, and which task to start first (with presentation of mating aspirations counterbalanced across condition with friendship aspirations). Participants started the aspirations tasks immediately after completing the SE-SI. The Friendship Investment Questionnaire was left upside down next to participants, with the instruction to turn the questionnaire over and complete it once they had completed the aspirations tasks.

***Phase 4: Manipulation checks and debriefing.*** The researcher then administered a manipulation check by asking participants to fill out the Feedback Evaluation Form. Following this, participants were then probed for suspicion using a funnel type interview (McFarland & Ross, 1982). Finally, participants were debriefed regarding the rationale and deceptions of the study, given instructions not to discuss

the study with anyone who was at University who was likely to be taking part in the study in the near future, and dismissed.

## **Results**

### **Overview**

Reliability analyses were initially conducted on all of the measures to determine if they could be averaged to form composite measures of state self-esteem, mating aspirations, friendship aspirations, and friendship investment. These composite measures were then used in the final analyses testing the main predictions. Manipulation checks were carried out to determine if the manipulation was successful, as was assessment of the variation in interview process to determine if participants' interview experiences were uniform. Finally, analyses were conducted to test the effects of the manipulation on state self-esteem, mating aspirations, and to determine if the effects were domain specific and mediated by state self-esteem (as predicted by theory).

### **Psychometric Properties of Measures**

*State self-esteem and social inclusion scale.* Reliability analyses were conducted to determine if the items on this measure were reliable. The results indicated that both the 11 items measuring state self-esteem and the 4 items measuring social inclusion demonstrated excellent reliability (Table 1) and were strongly correlated (see Table 2).

**Table 1: Descriptive and reliability statistics for SE-SI scale, and Friendship Investment Questionnaire – Study 1.**

	<i>M</i>	<i>SD</i>	<i>α</i>
Pre state self-esteem (SE, 11-item)	5.06	0.81	.89
Pre social inclusion (SI, 4-item)	4.99	0.94	.83
Pre-SE (SE/SI composite)	5.02	0.82	
Post state self-esteem (SE, 11-item)	4.91	0.94	.93
Post social inclusion (SI, 4-item)	4.64	1.20	.91
Post-SE (SE/SI composite)	4.78	1.03	
Friendship Investment Questionnaire	4.31	0.94	.83

**Table 2: Correlation matrix for pre and post manipulation state self-esteem, social inclusion, and composite measures – Study 1.**

		Pre			Post	
		SE (11-item)	SI (4-item)	SE/SI Composite	SE (11-item)	SI (4-item)
Pre- Manipulation	Pre social inclusion (SI, 4-item)	.78				
	Pre-SE (SE/SI composite)	.93	.95			
Post- Manipulation	Post state self-esteem (SE, 11-item)	.54	.42	.50		
	Post social inclusion (SI, 4-item)	.61	.54	.61	.87	
	Post-SE (SE/SI composite)	.60	.50	.58	.96	.97

All correlations significant  $p < .001$

$N = 83$

**Mating Aspirations.** To assess the reliability of this measure in the current study, reliability analyses were first carried out within each of the 18 mating profiles (five questions for each one). The alphas were all excellent, as can be seen in Table 3.

The five items in each scale were then averaged to produce one score for each profile, with higher scores representing higher mating aspirations. These three scores were then tested for reliability within each of the three a priori levels of attractiveness (low, moderate, and high). As can be seen in Table 3 these profiles generally obtained good internal reliability, and were thus averaged to obtain three scores for each set of profiles (low, moderate, and high). Three of the 18 ratings (one for the women and two for the men, obtained inadequate item-total correlations and so were deleted in forming the composite scores (see Table 3). High mating aspirations was operationalised as the extent to which participants rated themselves as compatible with the high mate value target group.

***Friendship Aspirations.*** As with mating aspirations; reliability analyses were first conducted within each of the 18 friendship profiles (four questions for each one). The alphas were all excellent, as can be seen in Table 4. The four items were then averaged to produce one score for each profile, with higher scores representing higher friendship aspirations. These three scores were then tested for reliability within each of the three a priori levels of attractiveness (low, moderate, and high). As can be seen in Table 4, again, these profiles generally obtained good internal reliability, and were thus averaged to obtain three scores for each set of profiles (low, moderate, and high). As with mating aspirations, the extent to which participants rated themselves as more compatible with high attractiveness same-sex profiles, was considered representative of higher friendship aspirations.

**Table 3: Means, standard deviations, and reliability coefficients for the mating aspirations profiles and composites – Study 1.**

Profile	<i>M</i>	<i>SD</i>	<i>α</i>
Female Profiles			
Low Attractiveness Composite	2.42	0.85	.79
Profile 1	2.98	1.17	.90
Profile 2	2.17	0.82	.84
Profile 3	2.11	1.01	.91
Moderate Attractiveness Composite*	3.46	1.05	.71
Profile 1	3.36	0.99	.85
Profile 2	3.90	1.15	.92
Profile 3	3.01	1.24	.94
High Attractiveness Composite	4.06	1.10	.80
Profile 1	4.18	1.38	.94
Profile 2	3.64	1.35	.93
Profile 3	4.36	1.16	.93
Male Profiles			
Low Attractiveness Composite	2.13	0.68	.78
Profile 1	2.38	0.90	.87
Profile 2	2.08	0.80	.89
Profile 3	1.95	0.73	.85
Moderate Attractiveness Composite*	3.41	1.06	.76
Profile 1	4.31	1.07	.92
Profile 2	3.53	1.30	.91
Profile 3	3.36	1.05	.92
High Attractiveness Composite*	3.96	0.97	.68
Profile 1	3.83	1.12	.88
Profile 2	4.09	1.10	.91
Profile 3	3.45	1.12	.92

\* Two item composite

**Table 4: Means, standard deviations, and reliability coefficients for the friendship aspirations profiles and composites – Study 1.**

Profile	<i>M</i>	<i>SD</i>	<i>α</i>
Female Profiles			
Low Attractiveness Composite	4.23	0.84	.84
Profile 1	4.71	0.89	.87
Profile 2	4.15	0.92	.86
Profile 3	3.83	1.08	.86
Moderate Attractiveness Composite	4.89	0.67	.67
Profile 1	4.78	0.79	.84
Profile 2	5.14	0.89	.93
Profile 3	4.72	0.92	.90
High Attractiveness Composite	4.51	0.97	.74
Profile 1	4.35	1.11	.88
Profile 2	4.13	1.28	.96
Profile 3	5.02	1.10	
Male Profiles			
Low Attractiveness Composite	3.71	0.85	.66
Profile 1	3.91	1.04	.87
Profile 2	3.75	1.00	.87
Profile 3	3.47	1.25	.94
Moderate Attractiveness Composite	4.17	0.96	.71
Profile 1	4.21	1.27	.94
Profile 2	3.94	1.07	.92
Profile 3	4.37	1.27	.94
High Attractiveness Composite	4.30	1.10	.84
Profile 1	3.97	1.36	.94
Profile 2	4.24	1.30	.93
Profile 3	4.69	1.12	.92



***Friendship investment.*** Initial analyses were conducted to determine if there were differences in the types of friends (acquaintance, good friend, best friend) participants rated in reference to the friendship investment questionnaire. A 3 x 4 chi square (type of friend x sex/manipulation [male included, male excluded, female included, female excluded]) analysis revealed that there were no differences between social exclusion-inclusion and males and females for the type of friend participants were rating  $\chi^2(6) = 3.85, ns$ .

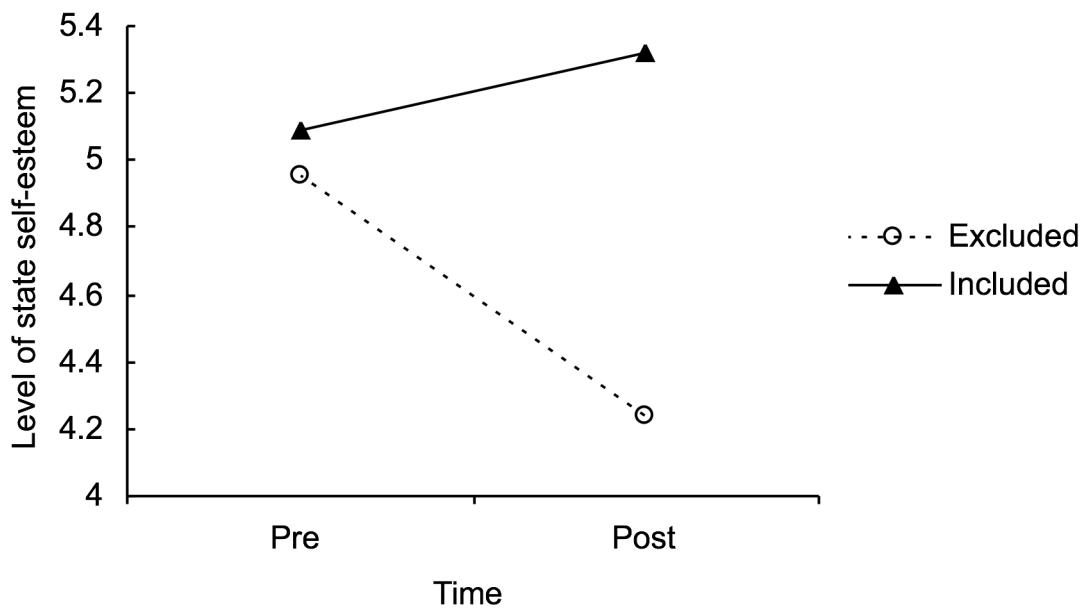
### **Main Analyses**

***Manipulation checks.*** There was little overlap in the responses of the social inclusion and social exclusion groups to the manipulation checks. As expected, the included group ( $M = 5.61, SD = 0.92$ , range: 3 to 7) perceived that their information was regarded much more positively than did the excluded group ( $M = 2.83, SD = 1.10$ , range: 1 to 6),  $t(81) = 12.45, p < .001$ . Likewise, the included group ( $M = 5.78, SD = 1.06$ , range: 2 to 7) perceived that they were more accepted by the interviewers than did the excluded group ( $M = 2.43, SD = 0.80$ , range 1 to 4),  $t(81) = 16.27, p < .001$ . Eighty-two of the 83 participants indicated that they were not suspicious of the feedback they received [the manipulation], with only one participant indicating suspicion. Analyses conducted with and without this one participant did not produce different results so this participant was consequently retained in the final sample.

***Assessing the effects of variation in the interview process.*** Given the number of questions answered by participants, length of interview, and perceived interviewer attractiveness varied somewhat across participants, a series of multiple regression analyses were conducted to determine whether this variation affected any of the dependent variables (DVs). Specifically, each DV of interest (post-SE; high mating

aspirations, high friendship aspirations; and friendship investment) was regressed on the number of questions answered, interview length, and perceived attractiveness of interviewers. Results indicated that none of these indices of variation in the interview process significantly predicted any of the DVs of interest ( $\beta$ s ranged from -.09 to .16).

***Effects of social inclusion-exclusion on state self-esteem.*** Analyses were conducted to test the prediction that individuals, who were socially excluded, compared with individuals who were social included, would experience decreases in post-SE. Specifically, a 2 x 2 x 2 (manipulation [exclusion-inclusion] x sex x self-esteem [pre/post]) mixed model analysis of variance (ANOVA) was conducted, with pre/post-SE as the repeated variable. The results (shown in Figure 5) were as expected, and indicated a significant main effect for manipulation with participants in the exclusion condition ( $M = 4.60$ ,  $SD = 0.86$ ) reporting significantly lower self-esteem than those in the inclusion condition ( $M = 5.21$ ,  $SD = 0.68$ ),  $F(1,79) = 12.68$ ,  $p < .001$ , partial  $\eta^2 = .14$ . In addition, there were significant main effects for time [pre/post], with significantly lower self-esteem scores reported post manipulation (post-SE;  $M = 4.78$ ,  $SD = 1.03$ ), than prior to experiencing the social exclusion-inclusion manipulation (pre-SE;  $M = 5.02$ ,  $SD = 0.83$ ),  $F(1,79) = 9.16$ ,  $p < .01$ , partial  $\eta^2 = .10$ . The two main effects are best understood by examining the significant time [pre/post] x manipulation. That is, participants who were socially excluded experienced a substantial decrease in state self-esteem (pre-SE:  $M = 4.96$ ,  $SD = 0.86$ ; post-SE:  $M = 4.24$ ,  $SD = 1.06$ ), whereas those who were socially included experienced a moderate increase in state self-esteem (pre-SE:  $M = 5.09$ ,  $SD = 0.79$ ; post-SE:  $M = 5.32$ ,  $SD = 0.64$ ),  $F(1,79) = 34.31$ ,  $p < .001$ , partial  $\eta^2 = .30$  (Figure 5). In sum, the manipulation significantly affected state self-esteem in the intended fashion.



**Figure 5: Effects of social exclusion-inclusion manipulation on state self-esteem - Study 1.**

***Effects of social exclusion-inclusion on mating aspirations.*** Next, analyses were conducted to test the prediction that experiencing social inclusion (relative to exclusion) would cause participants to raise their mating aspirations (i.e., feel more compatibility with the high attractive profiles). Specifically a 2 x 2 (manipulation [exclusion-inclusion] x sex) ANOVA was conducted with mate aspirations as the dependent variable. The results, revealed a significant main effect of manipulation  $F(1,79) = 8.20, p < .01$ , partial  $\eta^2 = .09$ , with participants who experienced social inclusion ( $M = 4.32, SD = 1.01$ ) reporting feeling significantly greater mating aspirations overall compared to those who experienced social exclusion ( $M = 3.70, SD = 0.96$ ). There were no other significant main effects or interactions.

***Domain-specificity of social exclusion-inclusion manipulation.*** The previous analyses demonstrated that being socially included (compared to being excluded) by opposite-sex interviewers caused participants to raise their mating aspirations. The next sets of analyses were conducted to test explicitly for domain-specificity.

Preliminary correlations (see Table 5) revealed significant positive associations between participants' mating aspirations and friendship aspirations. This individual difference across domains in terms of positive self-evaluations needs to be taken into account in any tests of domain-specificity. As described below, this artefact was controlled for using stepdown analyses (see Tabachnick & Fidell, 2007).

**Table 5: Inter-correlations of dependent variables – Study 1.**

	MA	FA	FI
Mating Aspirations (MA)			
Friendship Aspirations (FA)	.64***		
Friendship Investment (FI)	.01	.09	
Post SE	.41***	.43***	-.02

\*\*\*  $p < .001$

A 2 x 2 (manipulation x sex) multivariate analysis of variance (MANOVA) was initially conducted with mating aspirations, friendship aspirations, and friendship investment as the dependent variables ( $N = 83$ ). Initial analyses revealed no univariate or multivariate within-cell outliers at  $p < .01$ , with assumptions of normality, homogeneity of variance-covariance matrices, linearity, and multicollinearity all considered satisfactory. Using Wilks' criterion there were significant main effects of manipulation,  $F(3,77) = 4.40$ ,  $p < .01$ , partial  $\eta^2 = .15$ , and sex,  $F(3,77) = 3.57$ ,  $p < .01$ , partial  $\eta^2 = .12$ , on the combined dependent variables (DVs). This indicates a moderate association between the manipulation on the combined DVs, and a moderate association between sex and the combined DVs. There was no significant manipulation by sex interaction.

To investigate the impact of each independent variable on each of the dependent variables, Roy-Bargmann stepdown analyses were conducted. This procedure examines each dependent variable in turn, with high-priority dependent variables treated as covariates. The highest-priority dependent variable (mating aspirations) was tested in a univariate ANOVA and was then used as a covariate for testing friendship aspirations and friendship investment. All components of the stepdown analysis achieved homogeneity of regression.

The main results from the stepdown analysis (see Table 6), as predicted, revealed a significant unique effect of the social exclusion-inclusion manipulation on mating aspirations. Specifically, individuals who experienced social inclusion reported higher levels of compatibility to the high mate value profiles ( $M = 4.72$ ,  $SE = 0.15$ ) than those who experienced social exclusion ( $M = 3.70$ ,  $SE = 0.15$ ). In contrast, after adjusting for variation in global mating aspirations, there was a small opposite main effect of manipulation on friendship aspirations. Specifically, individuals who experienced social inclusion reported lower levels of friendship aspirations (adjusted  $M = 4.23$ ,  $SE = .13$ ) than those who experienced social exclusion (adjusted  $M = 4.58$ ,  $SE = .12$ ). Finally, after adjusting for the effects of sex on mating and friendship aspirations, females reported significantly greater levels of friendship investment (adjusted  $M = 4.59$ ,  $SE = .14$ ) than males (adjusted  $M = 4.04$ ,  $SE = .14$ ). These results indicate that the manipulation was domain specific in that it only moved aspirations for mating in the intended direction.

**Table 6: Summary of results for Roy-Bargmann stepdown analyses for high mating aspirations, high friendship aspirations, and friendship investment – Study 1.**

IV	DV	Univariate		Stepdown		$\alpha$	Partial $\eta^2$	CI (95%) on partial $\eta^2$	
		$F$	$df$	$F$	$df$			lower	upper
Manipulation	High Mating Aspirations	8.20 <sup>a</sup>	1/79	8.20 <sup>**</sup>	1/79	.01	.09	.01	.23
	High Friendship Aspirations	0.12	1/79	3.92 <sup>*</sup>	1/78	.01	.05	.00	.16
	Friendship Investment	0.75	1/79	0.79	1/77	.001	.01	.00	.09
Sex	High Mating Aspirations	0.24	1/79	0.24	1/79	.01	.00	.00	.07
	High Friendship Aspirations	0.88	1/79	2.85	1/78	.01	.04	.00	.14
	Friendship Investment	7.94 <sup>a</sup>	1/79	7.36 <sup>**</sup>	1/77	.001	.09	.01	.22
Manipulation x Sex	High Mating Aspirations	0.25	1/79	0.25	1/79	.01	.00	.00	.07
	High Friendship Aspirations	0.46	1/79	0.21	1/78	.01	.00	.00	.07
	Friendship Investment	0.04	1/79	0.02	1/77	.001	.00	.00	.01

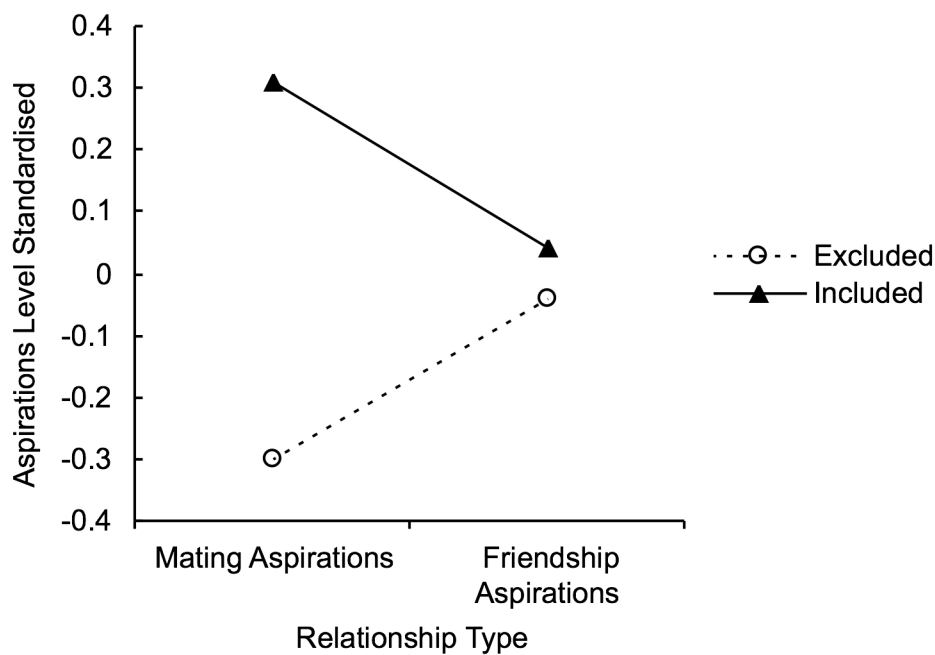
<sup>a</sup> Significance level cannot be evaluated, but would reach  $p < .01$  in univariate context

<sup>\*</sup>  $p = .05$

<sup>\*\*</sup>  $p < .01$

As a final test of domain specificity a 2 x 2 mixed model ANOVA (with manipulation as the between-group factors and relationship type [high mating aspirations, high friendship aspirations] as the within-group factor) was conducted on standardised aspirations levels. The results (shown in Figure 6), as expected, indicated a significant manipulation by relationship type interaction,  $F(1,81) = 8.68$ ,  $p < .001$ , partial  $\eta^2 = .10$ . That is, consistent with previous analyses univariate analyses (p. 52)

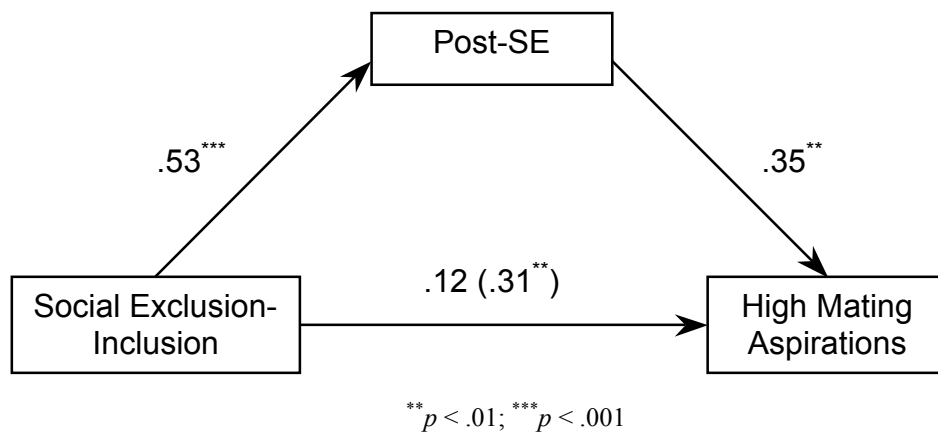
participants reported significantly greater mating aspirations following social inclusion ( $M = 0.31$ ,  $SD = 0.99$ ) as compared to experiencing social exclusion ( $M = -0.30$ ,  $SD = 0.93$ ),  $t(81) = -2.89$ ,  $p < .01$ , with a minimal difference in friendships aspirations between the inclusion ( $M = .04$ ,  $SD = 1.07$ ) and exclusion ( $M = -.04$ ,  $SD = 0.94$ ).



**Figure 6: Effects of social exclusion-inclusion manipulation on mating and friendship aspirations – Study 1.**

**Mediational analyses.** Bootstrap mediational analysis with 3000 resamples was conducted to test the hypothesis that state self-esteem (post-SE) mediates the association between the experience of social exclusion-inclusion and aspiration levels in selecting mates. The results of the analysis (shown in Figure 7) confirmed a mediational model. That is, individuals who were socially included, compared with those who were socially excluded, reported significantly higher post-SE ( $\beta = .53$ ,  $p < .001$ ) and higher mating aspirations ( $\beta = .31$ ,  $p < .01$ ). In addition, higher post-SE was associated with significantly higher mate aspirations ( $\beta = .35$ ,  $p < .01$ ), independent of

the manipulation. Finally, with the inclusion of post-SE in the model, the path from the manipulation to mating aspirations dropped from .31 to .12 (*ns*), indicating significant mediation; Sobel's  $z = 2.55, p < .05$ .



**Figure 7: Mediating effects of state self-esteem on high mating aspirations after experiencing social exclusion-inclusion – Study 1.**

### Summary

The results from Study 1 supported my predictions. First, participants in Study 1 after experiencing social exclusion reported decreases in state self-esteem, and those who experienced social inclusion reported increases in state self-esteem. Second, the experience of social exclusion-inclusion had direct effects on levels of mating aspirations, with participants who experienced social exclusion reporting lower mating aspirations than those who experienced social inclusion. Third, stepdown analyses indicated that social exclusion-inclusion was domain specific, with the effects of the manipulation only influencing the mating domain in the predicted direction and the results from the mixed model ANOVA demonstrating a null effect on friendship aspirations (Figure 6). Fourth, mediational analyses revealed that the exclusion-inclusion effects on mating aspirations were significantly mediated by state



self-esteem. That is, when taking into account changes in state self-esteem, the direct effect of social exclusion-inclusion on mating aspirations all but disappeared.

Study 1 assessed the impact of social exclusion by members of the opposite-sex on aspiration levels. Study 2 was designed to extend the results of Study 1 by examining the impact of social exclusion on the relationship components of commitment and satisfaction for individuals already in an intimate relationship.

## Chapter 4: Study 2

### Social Exclusion, Self-esteem, & Intimate Relationships

If there are indeed adaptive mechanisms that drive mate selection from a cost-benefit stand-point (Gangestad & Simpson, 2000), it would also stand to reason that there would be similar adaptive mechanisms that regulate and assess current intimate relationships. As previously noted, people want the best deal they can get in a mate, matching their own minimum standards (Regan, 1998a) and fitting the “budget” constraints when shopping for a potential mate (Li et al., 2002; Li & Kenrick, 2006). These minimum standards, budget constraints, and willingness to compromise on potential mate qualities, are in turn reliant on self-perceived mate value (Regan, 1998b). However, what happens if your mate value changes and you are already in a relationship? Study 1 demonstrated that for people who were single, higher mating aspirations were associated with higher self-esteem after experiencing “mating interest” from physically attractive members of the opposite sex. Murray’s research (Murray, Griffin, Rose, & Bellavia, 2003; Murray, Holmes, & Collins, 2006; Murray et al., 2000; Murray, Holmes, MacDonald, & Ellsworth, 1998; Murray et al., 2002; Murray et al., 2005) has indicated that global self-esteem moderates perceived closeness, acts as a protective factor for relationships, and promotes relationship closeness. Comparatively, we know from Kenrick and colleagues (1994) that exposure to physically attractive opposite sex targets decreases relationship satisfaction for males but not females. Sociometer theory (Kirkpatrick & Ellis, 2001; 2006; Leary & Downs, 1995; Leary et al., 1995) provides a framework to test and pull together these previous complementary research findings.

Although the domain specific sociometer model outlined by Kirkpatrick and Ellis (2001; 2004; 2006) focuses primarily on the adaptive processes of mate selection (attaining a mate), a logical extension would include the adaptive processes of retaining a mate. That is, calibrating perceived relationship quality in the context of an ever-changing mating market place. This process would work in a similar fashion as the calibration of mating aspirations, except, instead of the output constituting changes in mating aspirations, changes in perceived relationship quality or worth would occur – as outlined in Chapter 2 (refer to Figure 2). For example, people who experience rejection [exclusion] from attractive members of the opposite-sex should experience a decrease in mating self-esteem, which in turn should lead to an increase in perceived relationship quality. Individuals would perceive that their mate value has decreased and therefore consider their current relationship as *more* valuable given they now have *fewer* alternatives available. Conversely, experiencing a flurry of interest [inclusion] from attractive members of the opposite-sex should increase mating self-esteem, in turn leading to a decrease in perceived relationship quality. In this instance, individuals would perceive that given their mate value has increased there may be better alternatives available, making their current relationship less valuable.

This model was tested in the current study by utilising the same research procedure and simulated interaction paradigm as in Study 1 based on Simpson et al. (1999). The procedure was essentially the same as Study 1, with the exception of some of the questions measuring the outcomes. To test for domain specificity in this study participants again completed different measures from different domains: relationship commitment, relationship satisfaction, friendship aspirations, and friendship investment. Statistical analyses were conducted to test for the effects of the

manipulation, differences in sex, domain specificity of the social exclusion-inclusion manipulation, and to determine if mediation was present.

Study 2 is therefore an extension to Study 1 and an extrapolation to Kirkpatrick's and Ellis's (2001; 2004; 2006) domain specific sociometer model. Specifically, the following predictions were tested: 1) social exclusion by members of the opposite-sex causes pair-bonded individuals to perceive their current relationship as being more valuable [higher quality]; 2) social inclusion by members of the opposite-sex causes pair-bonded individuals to perceive their current relationship as being less valuable [lower quality]; 3) the causal link between social exclusion-inclusion and perceived relationship quality is mediated by changes in self-esteem; and 4) manipulating social exclusion versus inclusion by members of the opposite-sex does not influence either same-sex friendship aspirations or investment in current same-sex friendships.

## **Method**

### **Participants**

Eighty-one participants (40 males, 41 females) were recruited from the University of Canterbury through recruitment posters and emails to various undergraduate courses. The mean age of participants was 19.57 years ( $SD = 1.79$  years). Ninety-six percent of the participants identified themselves as being of European origin, with the remainder either Maori or Asian. Participants were only included in the study if they were currently in an intimate relationship. The mean relationship length was 16 months ( $SD = 13.69$  months). Eighty percent of the participants indicated they were dating one person exclusively – not living together, 16 percent were dating exclusively and living together, with the remaining 4 percent

engaged to be married. Participants each received a voucher for \$7.00 for a campus café.

### **Measures & Forms**

***Pre-experimental screening and recruitment questionnaire:*** This is the same questionnaire as used in Study 1 with the addition of a 4-item version of the PRQC (PRQC-S; see below), constructed in a Microsoft Excel spreadsheet so that potential participants could fill out in privacy and send back as an attachment in an email.

***State self-esteem and social inclusion scale (SE-SI):*** As with Study 1, this served as a measure of global state self-esteem including eleven items measuring general state self-esteem and four items measuring social inclusion. Consistent with Study 1, both subscales produced good internal reliabilities and were averaged to produce scores for state self-esteem and social inclusion for pre and post times (Table 7). Consistent with sociometer theory, the measures of state self-esteem and social inclusion were strongly associated (Table 8) and were therefore averaged to form a composite of overall pre and post manipulation self-esteem (pre-SE, post-SE).

***Perceived relationship quality components inventory – Short form (PRQC-S):*** An adapted version of the Perceived Relationship Quality Components (PRQC) Inventory designed by Fletcher, Simpson, and Thomas (2000b) to measure the constructs that make up perceived relationship quality. The PRQC-S is a 4-item, two component inventory (commitment and satisfaction), rated on a 7-point likert scale (1 = not at all, 7 = extremely). The two items measuring satisfaction were: “How satisfied are you with your relationship?” and “How content are you with your relationship?” The two items measuring commitment were: “How dedicated are you to your relationship?” and “How committed are you to your relationship?” The

instructions were for participants to rate their current partner and relationship. The items for both subscales correlated strongly (Table 9) and were averaged to produce scores for relationship commitment and satisfaction – pre and post times.

***Relationship prime:*** Two items were included asking participants to write two short paragraphs on the aspects that they like, and do not like about their current relationship. This form was designed to act as a prime for participants to start thinking about aspects of their current relationship just prior the interview part of Phase 2. The two items were: “Please write a brief paragraph about the things you like in your current relationship”; and “Please write a brief paragraph about the things that you do not like in your current relationship.”

***Date rating form:*** The same form as used in Study 1, which served as the social exclusion-inclusion manipulation.

***Interview evaluation form:*** The same as used in Study 1 – a 7-item questionnaire, which asked participants to rate the interview process (4 items) and attractiveness (3 items) of the interviewers.

***Demographics questionnaire:*** The same form used in Study 1.

***Friendship investment questionnaire:*** The same form used in Study 1 – designed to measure individuals’ willingness to invest in a current same-sex friendship. Reliability analyses indicated that that 14-item measure demonstrated good internal consistency (Table 7), and was therefore averaged to form a global measure of friendship investment, with higher scores indicating higher friendship investment.

***Feedback evaluation forms:*** The same form as used in Study 1 – a three-item measure with two items designed as a manipulation check, and one item assessing participants' level of suspicion.

### **Electronic Equipment**

***Stimulus material.*** The same two DVDs that were created and used in Study 1 (one with 3 male interviewers and one with 3 female interviewers) also served as stimulus material for the video interview for this study.

***Friendship aspirations program.*** The same computer program as used in Study 1 to assess friendship aspirations. Consistent with Study 1, the 4-items for each of the 6 high friendship profiles demonstrated excellent internal reliability ( $\alpha s > .87$ , see Table 10), and were therefore averaged to created composite measures of perceived friendship compatibility with each of the high value profiles – a reflection of friendship aspirations.<sup>4</sup>

### **Experimental Laboratory Environment**

The experimental lab was the same as in Study 1.

### **Procedure**

***Phase 1: Recruitment and baseline measures.*** This phase was identical to Study 1, with one exception – the addition of the 4-item PRQC as one of the pre-measures in the pre-experimental recruitment and screening questionnaire. Participants completed the electronic form and then sent it back to the researcher as an attachment. The measure provided a pre-manipulation assessment of current state

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<sup>4</sup> The 4-items for each of the moderate value and low value friendship profiles demonstrated variable internal reliability ( $\alpha s$  ranging from .48 to .84).

self-esteem, relationship satisfaction, and relationship commitment, in a neutral context.

***Phase 2: Experimental manipulation.*** Using random assignment, the researcher allocated 42 participants to the social inclusion group (21 males, 21 females), and 39 participants to the social exclusion group (19 males, 20 females). Participants reported at staggered intervals to the waiting area and participated in the study one at a time. Participants gave informed consent, following a generic explanation of the study—they would be taking part in two separate studies, 1) to examine how people use personal information to choose potential dates, and 2) to use personal information in relationship profiling.

The rest of this Phase followed a similar format to Phase 2 in Study 1, with the exception of a slight change to the cover story and instructions to reflect the use of participants in a relationship and the addition of the relationship prime in the packet of questionnaires. The following experimental script, adapted from Simpson et al. (1999), was read to participants in Study 2:

*“OK, now for the interaction part of the study. Now, professor Garth Fletcher here in the department, he’s like the relationship guy. He’s been asked to develop a program that looks at different personalities and compatibility for partners etc. However, before we run the program properly, what we’d like to do is get some feedback from people already in a relationship as to how appropriate and applicable the questions are that are being asked. Sort of like a process issue.”*

*“So, in another room we have three guys/girls also participating in the study. They’re going to ask you some questions. What we’re interested in is your*



*response to their questions, how they use your answers to form impressions, and your feedback about the process.”*

*“Now the way it’s going to work, so it’s a little less aversive than being in the same room as them, is via video link. So, the interviewers or the guys/girls will appear on the monitor here in front of you [researcher points] and will be able to see and hear you through the camera next to it.” [researcher points to the decoy camera]*

*“Each guy/girl will appear on the screen one at a time and ask you one question. Now, the screen will go blank between each question so that you can answer without distraction. I just basically cut the feed to the TV, but the camera will still be running all the time. There’s sort of two reasons for this, 1) so you don’t feel like the guys/girls are staring at you while you are answering the questions, even though they will be able to see you, and 2) so that they can discuss anything they may need to discuss without you hearing about it.”*

*“So, after you’ve answered the question the next interviewer will come on and so on until they feel that they have enough information to make the decisions that they’ve been asked to make. Basically, they decide when to end the interview process, which is why they need to discuss stuff without you hearing about it.”*

*“Now for this part of the study, the guys/girls have been told not to answer any questions from you, and to only ask each question once. So you’ll need to pay careful attention.”*

*“Finally, as one of the areas we’re interested in is the ratings that the guys/girls give, they don’t know you’re already in a relationship as this may unconsciously influence their perception of you. So, it’s important when you’re answering the questions that you don’t let on that you already have a partner. We’ll start in a couple of minutes time. I’ll be next door coordinating the video feed between the two rooms.”*

The researcher then made it obvious that he was turning on the monitor and camera (actually the decoy camera, the real camera was hidden behind the decoy and ran throughout the experiment) and then left the room. Approximately 1 minute later the stimulus DVD started.

Similar to Study 1, the goal was to expose each participant to a 6-minute interview process, and to have the participant respond to the same number of questions from each interviewer. The median interview length for Study 2 ended up at 5:58 minutes ( $M = 6:03$ ,  $SD = 0:52$ ) with the median number of questions answered being 12 ( $M = 10.96$ ,  $SD = 2.42$ ).

Consistent with Study 1, participants received the photos of the interviewers and Interview Evaluation Form, asking them to rate the interview process and attractiveness of each interviewer (1 = unattractive, 7 = attractive). The three female interviewers received mean attractiveness ratings of 4.43 ( $SD = 1.13$ ), 5.32 ( $SD = 0.92$ ), and 5.02 ( $SD = 1.10$ ) while the 3 male interviewers received mean attractiveness ratings of 4.90 ( $SD = 1.02$ ), 4.41 ( $SD = 1.20$ ), and 5.17 ( $SD = 1.28$ ) respectively. Participants therefore perceived the opposite-sex interviewers as average to above average in attractiveness. The remainder of this Phase followed the same format as Study 1: participants received the cover story that they had finished one study, were now going to start another study, and then given feedback ostensibly completed by the interviewers [manipulation].

### ***Phase 3: Measurement of dependent variables.***

***a) State self-esteem and social inclusion.*** Consistent with Study 1, the SE-SI was administered as a post-manipulation measure of state self-esteem.

***b) Relationship commitment, relationship satisfaction, friendship***

***aspirations and friendship investment.*** Similar to Study 1, except that instead of participants completing the mating aspirations task they completed the PRQC-S alongside the friendship aspirations task and Friendship Investment Questionnaire. This administration of the PRQC-S served as a post-manipulation measure of relationship commitment and satisfaction.

***Phase 4: Manipulation checks and debriefing.*** This followed the same format as Study 1.

## **Results**

### **Overview**

The analyses followed a similar sequence to Study 1, with reliability analyses initially conducted on all of the measures to determine if they could be averaged to form composite measures of state self-esteem, relationship commitment, relationship satisfaction, friendship aspirations and friendship investment. These composite measures were then used in the final analyses testing the main predictions. Manipulation checks were carried out to determine if the manipulation was successful, as was assessment of the variation in the interview process to determine if participants' interview experiences were uniform. Finally, analyses were conducted to test the effects of the manipulation on state self-esteem, relationship commitment and satisfaction, and to determine if the effects were domain specific and mediated by state self-esteem.

### **Psychometric Properties of Measures**

*State self-esteem and social inclusion scale.* Reliability analyses were conducted to determine if the items on this measure were reliable. The results indicated that both the 11 items measuring state self-esteem and the 4 items measuring social inclusion demonstrated excellent reliability (Table 7) and were strongly inter-correlated (see Table 8).

**Table 7: Descriptive and reliability statistics for SE-SI scale and Friendship Investment Questionnaire, and 4-item PRQC – Study 2.**

	<i>M</i>	<i>SD</i>	<i>α</i>
Pre state self-esteem (SE, 11-item)	5.02	0.80	.89
Pre social inclusion (SI, 4-item)	4.91	0.98	.84
Pre-SE (SE/SI composite)	4.96	0.85	
Post state self-esteem (SE, 11-item)	2.04	0.77	.87
Post social inclusion (SI, 4-item)	4.80	1.02	.86
Post-SE (SE/SI composite)	4.92	0.84	
Pre commitment	6.01	1.03	
Pre satisfaction	5.58	1.02	
Pre relationship quality index (Pre-PRQI)	11.67	1.89	
Post commitment	6.05	1.17	
Post satisfaction	5.69	1.00	
Post relationship quality index (Post-PRQI)	11.74	2.05	
Friendship Investment Questionnaire	4.03	0.85	.82

*Note:* Alphas are only shown for scales with more than two items.

*Perceived relationship quality components inventory – Short form.* The results indicated that the 2 items measuring relationship commitment and the 2 items measuring relationship satisfaction were strongly correlated (Table 9) and were

normally distributed (Table 7), with higher scores representing greater levels of relationship satisfaction and commitment. These items were combined to create a single perceived relationship quality index (PRQI) score for each participant pre and post manipulation (refer to Table 7 for descriptives).

**Table 8: Correlation matrix for pre and post manipulation state self-esteem, social inclusion, and composite measures – Study 2.**

		Pre			Post	
		SE (11-item)	SI (4-item)	SE/SI Composite	SE (11-item)	SI (4-item)
Pre- Manipulation	Pre social inclusion (SI, 4-item)	.80				
	Pre-SE (SE/SI composite)	.94	.96			
Post- Manipulation	Post state self-esteem (SE, 11-item)	.65	.57	.64		
	Post social inclusion (SI, 4-item)	.53	.52	.55	.75	
	Post-SE (SE/SI composite)	.62	.58	.63	.64	.95

All correlations significant  $p < .001$ ;  $N = 81$

**Friendship aspirations.** As with Study 1; reliability analyses were first conducted within each of the 18 friendship profiles (four questions for each one). The alphas were all good, as can be seen in Table 10. The four items were averaged to produce one score for each profile, with higher scores representing higher friendship aspirations. Again, consistent with Study 1, these three scores were then tested for reliability within each of the three a priori levels of attractiveness (low, moderate, high). These three items also demonstrated variable reliability (Table 10) with only the high value profiles averaged to obtain a single score of friendship aspirations. The extent to which participants rated themselves as more compatible with high

attractiveness same-sex profiles was considered representative of higher friendship aspirations.

**Table 9: Correlation matrix relationship commitment, relationship satisfaction, and perceived relationship quality indices (PRQI); pre and post manipulation – Study 2.**

	Within Scale (2-items)	Pre			Post	
		Sat	Com	PRQI	Sat	Com
Pre	Satisfaction (Sat; 2-items)					
	Commitment (Com; 2-items)					
	PRQI <sup>a</sup>					
Post	Satisfaction (Sat; 2-items)	.68	.58	.68		
	Commitment (Com; 2-items)	.60	.78	.75	.79	
	PRQI <sup>a</sup>	.67	.73	.76	.94	.95

All correlations significant  $p < .001$ ;  $N = 81$

<sup>a</sup>Perceived Relation Quality Index (Commitment + Satisfaction)

**Friendship investment.** Initial analyses were conducted to determine if there were differences in the types of friends (acquaintance, good friend, best friend) with which participants were rating the friendship investment questionnaire in reference to. A 3 x 4 chi square (type of friend x sex/manipulation cells [male included, male excluded, female included, female excluded]) analysis revealed that there were no differences between social exclusion-inclusion and males and females for the type of friend participants were rating  $\chi^2(6) = 3.30$ ,  $ns$ .

**Table 10: Means, standard deviations, and reliability coefficients for the friendship aspirations profiles and composites – Study 2.**

<b>Profile</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>α</i></b>
Female Profiles			
Low Attractiveness Composite	3.83	0.94	.82
Profile 1	4.40	1.06	.90
Profile 2	3.75	0.99	.89
Profile 3	3.36	1.16	.91
Medium Attractiveness Composite	4.64	0.74	.48
Profile 1	4.68	1.12	.91
Profile 2	5.12	0.96	.93
Profile 3	4.22	1.07	.92
High Attractiveness Composite	4.15	1.17	.89
Profile 1	4.20	1.34	.95
Profile 2	3.81	1.40	.95
Profile 3	4.63	1.08	.95
Male Profiles			
Low Attractiveness Composite	3.80	0.72	.62
Profile 1	4.20	1.04	.85
Profile 2	3.70	0.91	.83
Profile 3	3.50	0.91	.80
Medium Attractiveness Composite	4.52	0.88	.64
Profile 1	4.70	1.24	.89
Profile 2	4.62	1.12	.91
Profile 3	4.24	1.14	.91
High Attractiveness Composite	4.46	1.07	.84
Profile 1	4.24	1.28	.87
Profile 2	4.45	1.19	.90
Profile 3	4.82	1.03	.92

## **Main Analyses**

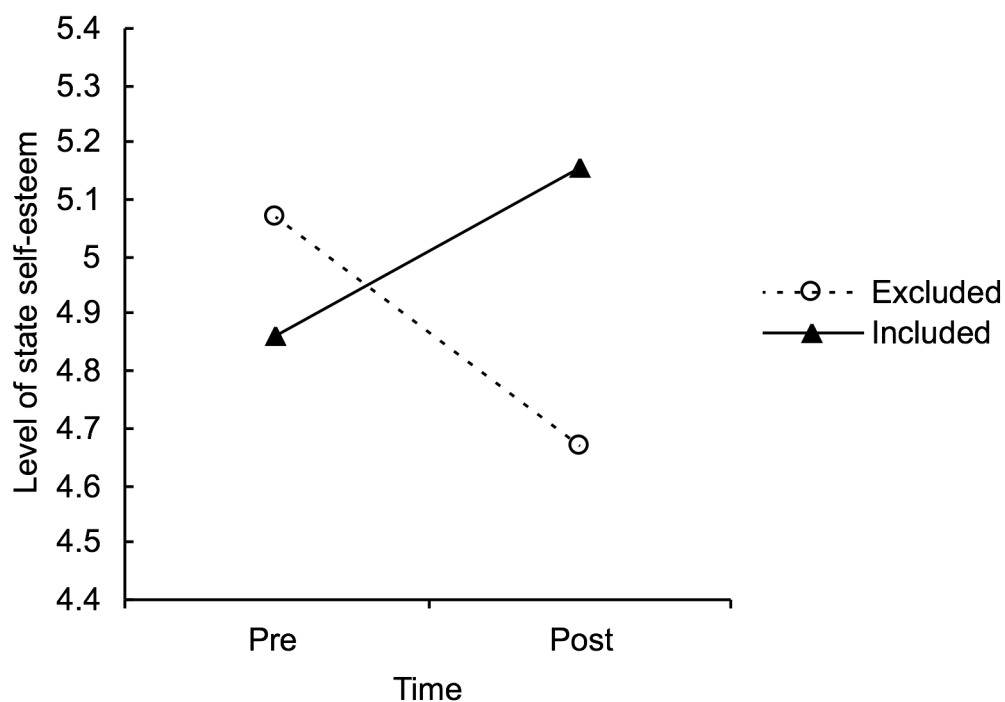
***Manipulation checks.*** There was little overlap in the responses of the social inclusion and social exclusion groups to the manipulation checks. As expected, the included group ( $M = 5.71$ ,  $SD = 0.84$ , range: 3 to 7) perceived that their information was regarded much more positively than did the excluded group ( $M = 2.90$ ,  $SD = 1.17$ , range: 1 to 7),  $t(79) = 12.58$ ,  $p < .001$ . Likewise, the included group ( $M = 5.64$ ,  $SD = 1.03$ , range: 2 to 7) perceived that they were more accepted by the interviewers than did the excluded group ( $M = 2.67$ ,  $SD = 1.11$ , range 1 to 6),  $t(79) = 12.52$ ,  $p < .001$ . None of the 81 participants indicated that they were suspicious of the feedback they received [the manipulation].

***Assessing the effects of variation in the interview process.*** Given that the number of questions answered by participants, length of interview, and perceived interviewer attractiveness varied somewhat across participants, a series of multiple regression analyses were conducted to determine whether this variation influenced any of the dependent variables (DVs). Specifically, each DV of interest (post-SE; post satisfaction; post commitment; high friendship aspirations; and friendship investment) was regressed on number of questions answered, interview length, and perceived attractiveness of interviewers. Of the 15 associations tested, only one reached statistical significance at the .05 level. Because one significant effect approximates what could be expected by chance, the effect was not interpreted. Overall, measured variation in the interview process had little impact on the DVs ( $\beta$ s ranged from  $-.17$  to  $.24$ ).

***Effects of social inclusion-exclusion on state self-esteem.*** Analyses were then conducted to test the prediction that individuals who were socially excluded, compared with individuals who were social included, would experience decreases in



post-SE. Specifically, a 2 x 2 x 2 (manipulation [exclusion-inclusion] x sex x self-esteem [pre/post]) mixed model analysis of variance (ANOVA) was conducted, with pre/post-SE as the repeated variable. The results revealed no main effects; however, a significant time [pre/post] x manipulation interaction was obtained. That is, participants who were socially excluded experienced a substantial decrease in state self-esteem (pre-SE:  $M = 5.07$ ,  $SD = 0.83$ ; post-SE:  $M = 4.67$ ,  $SD = 0.92$ ), whereas those who were socially included experienced a moderate increase in state self-esteem (pre-SE:  $M = 4.86$ ,  $SD = 0.86$ ; post-SE:  $M = 5.16$ ,  $SD = 0.67$ ),  $F(1,77) = 23.87$ ,  $p < .001$ , partial  $\eta^2 = .24$  (Figure 7). In sum, the manipulation significantly affected state self-esteem in the intended fashion and replicated the findings from Study 1.



**Figure 8: Effects of the social exclusion-inclusion manipulation on state self-esteem – Study 2.**

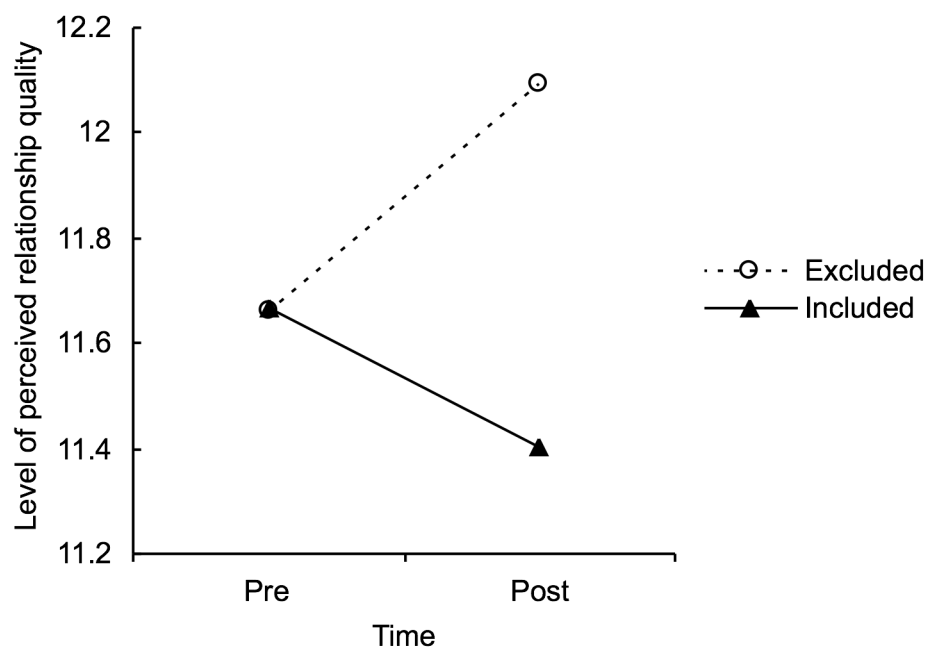
*Effects of social exclusion-inclusion on perceived relationship quality.* Next, analyses were conducted to test the predictions that individuals who were socially excluded would experience increases in relationship commitment and relationship

satisfaction, whereas individuals who were socially included would experience decreases in relationship commitment and satisfaction. Specifically, a 2 x 2 x 2 (manipulation [exclusion-inclusion] x sex x perceived relationship quality [pre/post]) mixed model analyses of variance (ANOVA) was conducted using the PRQI as the repeated variable.

The results revealed a significant time [pre/post] x manipulation on perceived relationship quality (PRQI). That is, individuals who were socially excluded reported an increase in PRQI (pre-PRQI:  $M = 11.66$ ,  $SD = 1.80$ ; post-PRQI:  $M = 12.10$ ,  $SD = 1.52$ ), whereas those who were socially included reported a decrease (pre-PRQI:  $M = 11.67$ ,  $SD = 1.99$ ; post-PRQI:  $M = 11.40$ ,  $SD = 2.41$ ),  $F(1,77) = 5.47$ ,  $p < .05$ , partial  $\eta^2 = .07$  (Figure 9). The results did not reveal significant main effects of manipulation or sex.

Given the strong associations between the pre/post measures of commitment and satisfaction (refer to Table 9), and to further verify the effect of the manipulation on relationship commitment and satisfaction, further analyses were conducted. Specifically, two 2 x 2 (manipulation [exclusion-inclusion] x sex) analysis of covariances (ANCOVAs) were conducted on the post measures of commitment and satisfaction with their pre measures as respective covariates. The results revealed significant main effects of manipulation on both relationship commitment and relationship satisfaction. That is, participants who were excluded reported more relationship commitment ( $M = 6.25$ ) and satisfaction ( $M = 5.86$ ) than those who were included (commitment  $M = 5.87$ ; satisfaction  $M = 5.53$ ), commitment  $F(1,76) = 5.79$ ,  $p < .05$ , partial  $\eta^2 = .07$ ; satisfaction  $F(1,76) = 4.31$ ,  $p < .05$ , partial  $\eta^2 = .05$ . There were no main effects of sex or manipulation by sex interactions indicated in the ANCOVAs.

***Domain-specificity of social exclusion-inclusion manipulation.*** The previous analyses demonstrated that being socially included by opposite-sex interviewers caused participants to reduce their perceptions of the quality of their current relationship (i.e., levels of commitment and satisfaction) and being social excluded caused participants to increase their perceptions of their relationship quality. The next sets of analyses were conducted to test specifically for domain-specificity. Unlike Study 1 however, preliminary analyses (bivariate correlations) revealed no significant associations between participants' ratings of the quality of their relationship (as represented by the PRQI) and their friendship aspirations or their level of reported friendship investment (Table 11). This lack of an association indicates independence of the dependent variables.



**Figure 9: Effects of social exclusion-inclusion manipulation on perceived relationship quality – Study 2.**

**Table 11: Inter-correlations of dependent variables – Study 2.**

	Post PRQC	FA	FI
Friendship Aspirations (FA)	.09		
Friendship Investment (FI)	-.01	.04	
Post SE	.31**	.41***	-.15

\*\*  $p < .01$ ; \*\*\*  $p < .001$

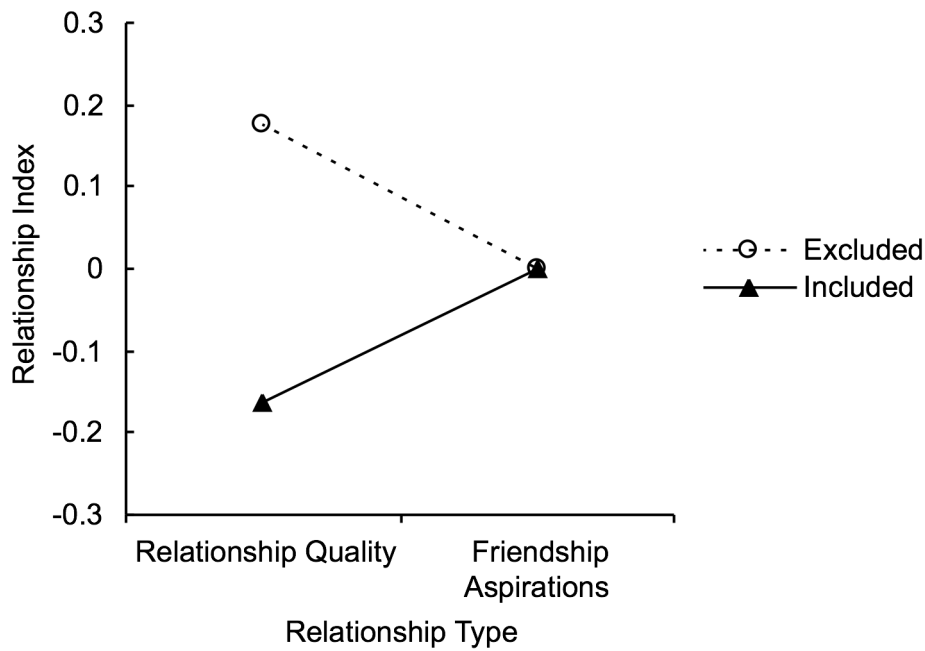
These results suggest that relationship quality and friendship aspirations are independent of each although there was common association with self-esteem, which was influenced by the social exclusion-inclusion manipulation. Therefore, to test for domain specificity a multiple regression analysis was conducted to determine the impact of the social exclusion-inclusion manipulation on perceived relationship quality while controlling for high friendship aspirations and pre manipulation relationship quality. The inclusion of high friendship aspirations as an IV in the regression equation barely changed the effect of the manipulation on perceived relationship quality (see Table 12). Furthermore, the addition of friendship aspirations did not significantly add to the overall variance accounted for ( $R^2$  remaining at .61). The robustness of the effect of the manipulation on perceived relationship quality, even after adjusting for friendship aspirations, provides strong evidence for domain-specificity.

**Table 12: Results from a multiple regression testing for domain specificity of manipulation on perceived relationship quality controlling for friendship aspirations – Study 2.**

		Criterion: Post PRQI			
		<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>
Model 1	Pre-PRQI (covariate)	.83	.08	.76	10.72 <sup>***</sup>
	Manipulation	-.70	.29	-.17	-2.41 <sup>*</sup>
Model 2	Pre-PRQI (covariate)	.82	.08	.76	10.42 <sup>***</sup>
	Manipulation	-.74	.31	-.18	-2.39 <sup>*</sup>
	Friendship Aspirations	.06	.14	.03	.39

\*  $p < .05$ ; \*\*\*  $p < .001$

As a final test of domain specificity a 2 x 2 mixed model ANCOVA (with manipulation as the between-group factors and relationship type [post-manipulation relationship quality, high friendship aspirations] as the within-group factor and pre-manipulation relationship quality as a covariate) was conducted. As perceived relationship quality and friendship aspirations were on different scales they were first standardised. Although the interaction did not reach statistical significance, ( $F[1,78] = 1.87, ns$ ), Figure 10 clearly demonstrates the domain specific effects of the manipulation on the different relationship types. That is, there is a clear difference in perceived relationship quality dependent on experiencing inclusion or exclusion, consistent with the univariate results reported on page 76 and depicted in Figure 9. These results, alongside the regression analyses provide additional evidence for a domain specific effect.

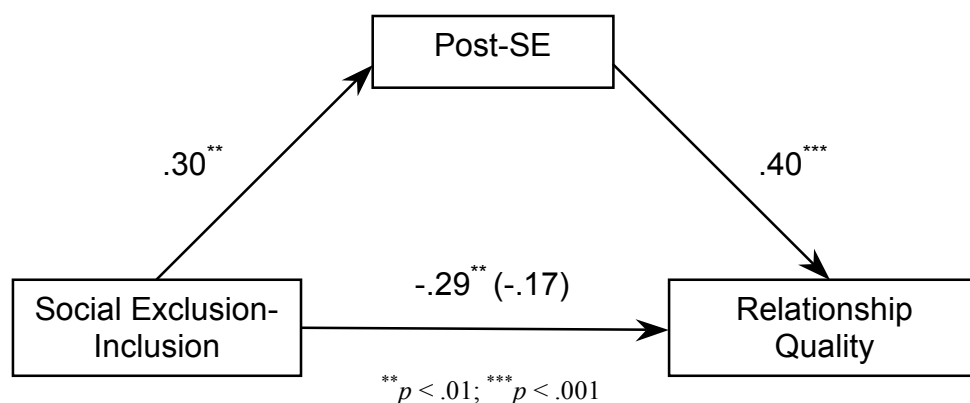


**Figure 10: Effects of social exclusion-inclusion manipulation on relationship quality and friendship aspirations – Study 2.**

**Mediational Analyses.** The above analyses tested for and confirmed domain specificity. However, as previously outlined, a key component of sociometer theory is that state self-esteem mediates the associations between the experiences of social exclusion-inclusion and the resulting effects in an individual's perceived relationship quality. Therefore, consistent with Study 1, bootstrap mediational analyses were conducted to test the hypothesis that state self-esteem (post-SE) mediated this effect. The results of the analysis (shown in Figure 11) revealed a suppression model. Specially, individuals who were socially included compared to those who were socially excluded, reported higher levels of post-SE ( $\beta = .30, p < .01$ ), with no initial effect on perceived relationship quality ( $\beta = -.17, ns$ ). In addition, higher post-SE was associated with significantly higher perceived relationship quality ( $\beta = .40, p < .001$ ), independent of the effect of the social exclusion-inclusion manipulation. Finally, with the inclusion of post-SE in the model, the path from the manipulation to perceived

relationship quality increased from  $-.17$  (*ns*) to  $-.29$  ( $p < .01$ ), indicating suppression; Sobel's  $z = 2.15$ ,  $p < .05$ .

The above results indicate the following: 1) that experiencing social inclusion increases self-esteem; 2) that independent of experiencing social exclusion-inclusion, increases in self-esteem lead to increases in perceived relationship quality; and 3) that experiencing social inclusion independent of self-esteem levels leads to a lowering of perceived relationship quality. There are, therefore, two simultaneous effects from the manipulation. For example, after experiencing social inclusion an individual will concurrently have a boost in their self-esteem and a lowering in perceptions of quality of their relationship. In turn, increases in self-esteem (consistent with Murray et al., 2003), acts as a protective factor by increasing perceived relationship quality thus cancelling out the decrease as a direct result of the manipulation.



**Figure 11: Mediating effects of state self-esteem on perceived relationship quality after experiencing social exclusion-inclusion – Study 2.**

## Summary

The results from Study 2 supported my predictions as well as replicated and extended the findings from Study 1. Consistent with Study 1, participants in Study 2 after experiencing social exclusion reported decreases in state self-esteem, whereas those who experienced social inclusion reported increases in state self-esteem. Second, the experience of social exclusion-inclusion had direct effects on perceived relationship quality with those who experienced social exclusion reporting increases in perceived relationship quality, whereas those who experienced social inclusion reported decreases in perceived relationship quality. Third, the regression analyses indicated that changes in friendship aspirations had no effect on perceived relationship quality and added nothing to the prediction model when included. Fourth, the results from the mixed model ANCOVA demonstrated an effect of the manipulation on perceived relationship quality with no effects on friendship aspirations. Finally, mediational analyses revealed that the effects of the social exclusion-inclusion manipulation on perceived relationship quality were mediated (although suppressed) by changes in state self-esteem. That is, increases in state self-esteem as a result of social inclusion acted as a protective factor for relationship quality buffering against, and cancelling out, the direct effect of experiences of social inclusion decreasing perceived relationship quality.

Study 1 assessed the impact of social exclusion-inclusion by members of the opposite-sex on aspiration levels for people who were single. Study 2 assessed the impact of social exclusion-inclusion by members of the opposite-sex on perceived relationship quality for people who were in a current intimate relationship.



## Chapter 5: Discussion

The results from both studies support the hypothesised links between experiences of social exclusion-inclusion, state self-esteem, and resulting relationship behaviours as predicted from a sociometer model of self-esteem (Hill & Buss, 2006; Kirkpatrick & Ellis, 2001; 2004; 2006; Leary & Downs, 1995; Leary et al., 1995; Penke et al., 2008). That is, experiencing acceptance or rejection from potential mates calibrates a person's mating strategies and does not appear to influence judgments in other domains such as friendships. Moreover, the cognitive-affective mechanism that mediates this domain specific change appears to be state self-esteem.

In Study 1, experiencing rejection from attractive opposite-sex people lowered state self-esteem, which in turn lowered mating aspirations. In contrast, experiencing acceptance from attractive opposite-sex people increased state self-esteem, which in turn leads to higher mating aspirations. Although there was a direct effect of the social exclusion/inclusion manipulation on mating aspirations, after controlling for changes in state self-esteem this effect was no longer significant – indicating a mediational model. That is, although changes in inclusionary status resulted in changes in mating aspirations this was a function of changes in state self-esteem.

In Study 2, experiencing acceptance from attractive opposite-sex people resulted in two simultaneous processes 1) an increase in state self-esteem, and 2) a decrease in perceived relationship quality. As with Study 1, state self-esteem mediated the association between experiencing acceptance and perceived relationship quality; however, in Study 2 it acted as a suppressor. In contrast to Study 1, the effect of the social exclusion/inclusion manipulation did not become apparent until after changes in state self-esteem were statistically controlled. That is, there were two

simultaneous processes acting in opposite directions that cancelled one another out in their effects on perceived relationship quality. Higher levels of state self-esteem (typically associated with more positive perceptions of relationship quality) acted as a buffer against experiencing greater inclusionary mating status. Therefore, when controlling for changes in state self-esteem, being included (as opposed to being excluded) resulted in lower perceptions of relationship quality (as predicted).

In both studies, the results supported the domain specific predictions derived from Kirkpatrick and Ellis' (2001) sociometer model. That is, manipulating inclusionary status in both studies had measurable outcomes on mating judgments and not friendship perceptions. In Study 1, after controlling for the unique effect of the manipulation on the mating aspirations in a Roy-Bargmann stepdown analysis, there was a small opposite effect of friendship aspirations,<sup>5</sup> indicating domain specificity. Furthermore, the effect size for the manipulation on mating aspirations (.09) was almost twice the magnitude of that for friendship aspirations (.05), with the results from the mixed model ANOVA indicating a significant manipulation by aspirations type interaction. In Study 2, after adding friendship aspirations into a stepwise regression model, the effect size of the manipulation on relationship quality did not significantly change. Moreover, friendship aspirations were not a significant predictor and did not significantly add to the overall variance accounted for, with the results from the mixed model ANCOVA (specifically Figure 10) adding further domain specific support by demonstrating an effect of the manipulation on perceived relationship quality, but not friendship aspirations. Finally, I demonstrated that the effect that changes to inclusionary status had on mating strategy behaviours were not

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<sup>5</sup> This effect was not mediated by state self-esteem.

an artefact of variation between participants in interview length, number of questions answered, or perceived attractiveness of opposite-sex interviewers.

## **Impacts of Social Exclusion and Inclusion**

### **State Self-Esteem**

Not surprisingly, and in keeping with Leary et al.'s (Leary & Downs, 1995; Leary et al., 1995) original sociometer model, experiences of social exclusion-inclusion led to changes in state self-esteem. People who experienced exclusion reported decreases in state self-esteem, whereas people who experienced inclusion reported increases in state self-esteem. This was a strong clear finding across both studies and consistent with previous research on belongingness and self-esteem (Gailliot & Baumeister, 2007; Pickett et al., 2004; Sommer et al., 2001; Williams et al., 2000). Furthermore, these effects of exclusion and inclusion were consistent with previous research reporting changes in self-esteem as a result of social approval or disapproval (Leary et al., 2003; Lemay & Ashmore, 2006) and reactions to the degree of acceptance within a group (Leary et al., 2001). Overall, sociometer theory's claim that state self-esteem acts as a barometer of one's inclusionary status was supported by the current research.

### **Mating Aspirations**

The results from Study 1 clearly indicate, as expected, that experiencing exclusion or inclusion in the mating domain influenced mating aspirations, with those who were rejected decreasing their mating aspirations and those who were accepted increasing their mating aspirations. Thus, the mating sociometer is effectively tracking relative inclusionary status in the mating domain (mate value). These

findings are consistent with Brase and Guy (2004) and Shackelford (2001) who found positive associations between self-perceived mate value and self-esteem. For those people who were accepted, increasing mating aspirations serves the objective of getting the best deal possible on the dating market (Gangestad & Simpson, 2000; Penke et al., 2008). For those people who were rejected, decreasing mating aspirations ensures greater chances of success in selecting mates, therefore minimising the potential costs associated with seeking mating partners outside of that which is realistically obtainable (Fletcher, 2002; Penke et al., 2008).

As outlined in Chapter 1, mate selection is a complex process involving multiple steps. This process involves assessment of specific mate value aspects in potential partners, incorporating this information into overall perceptions of mate quality, and then using this information to search through potential mates to decide who to pursue (Penke et al., 2008; Todd, 2007). The last step requires setting aspiration levels (i.e., calibrating the mating sociometer), so that aspirations are pitched at a realistic level, given the relative mating market place in order to retain a mate of the best defensible value (Fletcher, 2002; Penke et al., 2008). It is essential to set accurate aspiration levels, as selecting and choosing a mate is a dyadic process – one selects and is selected. If a person has misinterpreted his or her inclusionary status in the mating market place (for example, setting their sights too high) they are likely to miss out on potential mating opportunities. Realistic mate selection – in light of self-mate value – should lead people to select mates of similar mating value relative to the market place (given the dyadic nature of the process). In fact, this is generally the case, as people tend to form intimate relationships with other people who are similar to themselves in various ways including overall attractiveness – a matching process (Feingold, 1988; Hill & Reeve, 2004; Murstein, 1986).

Ellis and Kelley (1999) developed a classroom demonstration of this matching process called *The Pairing Game*. In the ‘game’, students are randomly assigned a number to place on their forehead so that others can see it but they cannot. This number represents the student’s fictional mate value (although students are not told this a priori). The goal is to pair off with another student with as high a value as possible. Students attempt to make a pairing by extending their hand to another student, which they can either accept or reject. If an offer is accepted, the students form a pair and move off to the side of the room – out of the selection process. If an offer is rejected then the search continues until a pair is successfully formed. In general, individuals with the highest numbers pair off with each other first – leaving the individuals with the next highest numbers to pair off next, and so on, until individuals with the lowest numbers are left to each other by default. Ellis and Kelley (1999) have reported that the intraclass correlation between paired values is typically around .70, indicating a high degree of matching on numeric value. In addition, at the end of the game, students attempt to guess their own number before looking at it, with Ellis and Kelley (1999) reporting a typical correlation of around .65 between estimates and actual assigned values. This correlation indicates that people, through experiences of acceptance and rejection, are able to infer their own values with reasonable accuracy. This exercise has also been replicated a number of times in a graduate psychology class on intimate relationships taught by Garth Fletcher, in which he typically reports correlations in the magnitude of .70 for both matching and estimating assigned values (Fletcher, 2002).

In terms of a real world mating scenario, experiences of acceptance and rejection in adolescence (Penke et al., 2008) start the process of developing realistic self-perceptions and speed up the matching process by guiding people towards

obtainable mates (Ellis & Kelley, 1999). Consistent with Kirkpatrick and Ellis (2001), and Penke et al. (2008), the current research demonstrated that experiences of social acceptance and rejection do calibrate self-appraisals and mating aspirations. The current research, consistent with mating sociometer theory (Hill & Buss, 2006; Kirkpatrick & Ellis, 2001; 2004; 2006; Penke et al., 2008), suggests that these corrections in mate aspirations are mediated by alterations in state self-esteem.

### **Relationship Quality**

The results from Study 2 demonstrated, as expected, an effect of the manipulation on perceived relationship quality, with people who were excluded (rejected) reporting increases and people who were included (accepted) reporting decreases in perceived relationship quality when controlling for pre-existing levels of perceived relationship quality. This particular finding is consistent with the previous research cited regarding the positive association between trait self-esteem and relationship satisfaction (e.g., Aune & Wong, 2002; Cramer, 2003a; 2003b; Lemay et al., 2007; Murray et al., 2000; Murray et al., 2001; Shackelford, 2001; Voss et al., 1999). The findings are also consistent with the premise, outlined earlier, that increases in inclusionary status external to the relationship lead to increases in perceptions of the availability of alternatives, which is in turn associated with lowered perceptions of relationship quality (see Figure 2, Chapter 2). Conversely, exclusion external to the relationship may decrease perceptions of alternatives, which are in turn associated with increases in perceptions of relationship quality – given (all things being equal) that there are now fewer alternatives available.

In his work Li (Li, 2008; Li et al., 2002; Li & Kenrick, 2006) uses principles of economics, giving people ‘mating budgets’ to determine the luxuries and

necessities in selecting a potential mate. Another principle of economics might also help to explain the results of the current research – the principles of supply and demand. That is, when a product is less available in the market place, as demand increases, costs increase for a product that has not changed in quality. Thus, a person who already has the product will consider what he or she has represents a good deal, as there is now a greater cost associated with a product of equal quality. However, if a product on the market place becomes more available, demand should decrease, so the market becomes more competitive and costs decrease. Thus, a shopper can select a product of higher quality for the same previous cost. In this context, a person might consider upgrading, as they will get a better product for the same cost as the one he or she already possesses.

Although people are not products, these principles can be applied to the mating market place. If there is an over-supply of mates on the mating market, there is greater intra-sex competition, which leaves the opposite sex with more alternatives of greater quality for the same cost (intra-sex competition defensibility). However, if there is a shortage of mates on the mating market place, then demand is high and the costs associated are high for potentially average quality mates. Similarly, if mating alternatives of potentially greater quality for the same cost (defensibility) exist, then a person might be motivated to change mating partners for someone of better quality. Alternatively, if there are no alternatives available a person should consider the relationship they currently have as more valuable.

### **Sociometer Theory**

The current research, not only lends support to Leary's original sociometer model (Leary & Downs, 1995; Leary et al., 1995), but also to Kirkpatrick's and

Ellis's (2001; 2004; 2006) expansions of the theory in terms of domain specificity. However, as previously stated, Hill and Buss (2006) suggested caution when invoking a domain-specific account of psychological mechanisms, given that the value of some interpersonal traits, such as social status, should overlap across domains. For example, the loss of status and resources or gaining substantial weight may negatively impact on playing in the local rugby team, belonging to an exclusive business club, and so forth (in addition to loss of value in the mating domain). Hence, such factors could have effects on self-esteem in both the mating and the coalitional domains.

Thus, the most plausible model might be one in which the self-esteem monitors across domains are quasi-independent, having the strongest linkages to specific classes of feedback and categories of other people (e.g., platonic friends versus romantic interests), but that each domain-specific sociometer will also feed into a global higher-order sociometer that tracks general inclusionary status. This global sociometer would also over time calibrate trait self-esteem. This possibility is consistent with the strong correlations typically found between state and trait measures of self-esteem (Haupt & Leary, 1997; Leary, 1999b; Leary et al., 2001; Leary et al., 1998).

### **Real World Applications**

In the 1980s legislators in California were persuaded to fund a task force to investigate and increase self-esteem within the state with the hope of huge financial pay-offs due to decreased welfare spending (Baumeister, Campbell, Krueger, & Vohs, 2003). Ultimately it was discovered it is not as simple as making people feel good about themselves (Baumeister et al., 2003). Since the 1980s there has been a major increase in research conducted investigating almost every association between self-



esteem and a multitude of human behaviours to understand further the role of self-esteem and human behaviour. Baumeister et al. (2003) undertook the mammoth task of reviewing this research and found no evidence for causal effects of self-esteem on a number of outcomes (e.g., academic achievement, job performance, social skills, interpersonal success, being more popular, sexual activity, healthy living, delinquency) and concluded:

*“We have not found evidence that boosting self-esteem (by therapeutic interventions or school programs) causes benefits. Our findings do not support continued widespread efforts to boost self-esteem in the hope that it will by itself foster improved outcomes. In view of the heterogeneity of high self-esteem, indiscriminate praise might just as easily promote narcissism, with its less desirable consequences. Instead, we recommend using praise to boost self-esteem as a reward for socially desirably behavior and self-improvement.”*

(Baumeister et al., 2003, p. 1)

Furthermore, Baumeister et al. (2003) suggest that in answer to the question “What is better, high or low?” they suggest the best option is accurate, honest self-esteem. However, despite the null findings from the California Task Force, and the findings outlined in Baumeister et al.’s, (2003) recent review, the lay public, and even some Clinical Psychologists, are still caught up in attempting to change self-esteem to improve life. The results from the research in this thesis (in line with Baumeister et al., 2003 findings) suggests it would be more beneficial (and cost effective) not to focus on self-esteem per se, but to focus on the aspects that are ultimately causing the changes in self-esteem.

If sociometer theory is correct, then the focus of change could deal with either the external environment or the internal interpretation of events. Although changes in

self-esteem do appear to eventually facilitate cognitive and behavioural changes, in the first instance it is a barometer or gauge. If the temperature gauge in a car was reading hot and the warning lights on the dashboard were indicating the car was overheating, one would not stop to fix the gauge or the sensor, but take corrective action that caused the gauges to change. Likewise, if self-esteem is a sensor, then ‘fixing’ self-esteem would be a futile task, and in some instances according to Baumeister et al. (2003) actually detrimental.

For example, a popular approach to couples therapy has been traditional behavioral couples therapy (TBCT; Baucom, Shoham, Mueser, Daiuto, & Stickle, 1998; Christensen & Heavey, 1999; Jacobson & Addis, 1993). The focus of this therapy was to treat two individuals and separately modify their contributions and reactions to their partner’s behaviour to facilitate collaboration and communication between partners. However, a more recent approach is *integrative behavioral couples therapy* (IBCT), which has the primary goal of promoting each partner’s *acceptance* of the other (Wheeler, Christensen, & Jacobson, 2001). IBCT has been demonstrated to be superior to TBCT in terms of changes in relationship satisfaction, in part due to the acceptance component (Doss, Thum, Sevier, Atkins, & Christensen, 2005). Findings from the current research would be consistent with an IBCT approach in facilitating greater acceptance by a partner, especially in terms of partner desirability, thus boosting self-esteem. The resulting boost from the partner may then in turn promote greater relationship satisfaction and commitment. Furthermore, the ability to integrate complements (acceptance) from a romantic partner has been demonstrated to facilitate felt security and relationship satisfaction (Marigold, Holmes, & Ross, 2007), as has positive regard (Murray, 2005).

This approach would be consistent with my prior treatment of changes in mating aspirations vis-à-vis relationship quality in Chapter 2 (refer to Figure 1). That is, receiving feedback from an intimate partner regarding one's mate value may not only increase self-perceived mate value, but also strengthen the love and bond between the couple. However, if at times of stress in a relationship, one or both partners are receiving feedback from others regarding their potential mate value, this may produce changes in perceived relationship quality, perhaps resulting in the demise of the relationship. Thus, dressing or acting in a way to attract attention and compliments from people outside the relationship to get a boost in self-esteem, may sound innocuous, but may serve to undermine the relationship.

### **Limitations & Future Directions**

Although the results from the current research were convincing, it has its limitations. The participants were a convenience sample of university students with a relative young mean age and mostly white European New Zealanders. Mating aspirations may change with age, especially for women when they are getting closer to the biological age of decreased fertility. For example, as a woman starts to reach the age of 30 years her fertility and chances of getting pregnant drop substantially (Santrock, 2006). This may in turn force a change in mating strategies, particularly in setting aspirations. If a woman is not already in a relationship by around this age, biological pressures may force her to be less selective in search for a potential mate (i.e., lowering aspiration levels). Perhaps at this point women will be more sensitive to changes of inclusionary status in the mating market. The same would not hold true for men, however, because as they increase in age they generally acquire more resources and status, which would make them more desirable as a potential mate. Men

therefore might become more selective in the search for the selection of a potential mating partner, as for them the only major cost is resource investment (which as they age they typically acquire more of) given that men can potentially continue to reproduce until they die.

Another limitation of the current research is that it did not manipulate the attractiveness of the panel of interviewers who accepted and rejected the participants, although participants' perceptions of interviewer attractiveness were measured. Todd and Miller (1999) argue that the mate value of the individuals' initiating offers and refusals influence the effect of feedback on mating aspirations. By utilising computer simulations of different versions of The Pairing Game, Todd and Miller (1999) discovered a set of problem solving rules was being utilised by individuals. Using these algorithms lead to people to finding 'partners' who are similar in value in a reasonably short time frame. They were: 1) for every offer from someone who is higher in mate value than your current aspirations level, increase your aspirations level by half the discrepancy; 2) do not change your aspirations level if you receive offers from someone who is of lower in mate value than your current aspirations level; and 3) for every rejection from someone who is lower in mate value than your current aspirations level, decrease your aspirations level by half the discrepancy.

The research conducted in this thesis could take numerous directions. With regard to the mating sociometer, it would be interesting to investigate reactions to exclusion or inclusion (positive or negative feedback) from a current partner to determine the role of the sociometer in this context. This would help to clarify the cause of the suppressor effect of state self-esteem found in Study 2, and test the proposition that positive feedback from the partner will maintain relationship

satisfaction or commitment, because such feedback will simultaneously strengthen the relationship bond and the self perceptions of mate value maintained by the partner.

Future research might also focus on other potential sociometers suggested by Kirkpatrick and Ellis (2001), such as a coalitional sociometer. For example, to what extent does exclusion and inclusion in a coalitional setting influence relevant judgments and behaviours, and is domain-specific self-esteem a key element in this process? Further investigation along these lines would add to the current research in the understanding of the role and function of state self-esteem, domain specific sociometers, and interpersonal relationships.

### **Conclusions**

As mentioned previously, a vast and expanding amount of research has been conducted examining self-esteem processes. However, up until recently most of this research lacked an explanatory theoretical foundation. Sociometer theory provides a framework from which predictions about the role and functions of self-esteem can be advanced. Furthermore, the sociometer model provides elegant explanations and predictions for changes in self-esteem that can ultimately be moved from the research laboratory to applied settings. The results from this thesis not only fit comfortably within the sociometer account of self-esteem, but are also theoretically plausible. Although more research is needed to investigate and expand sociometer theory, the results to-date (including those in this thesis) provides compelling evidence in support of the general theory, and extensions which propose that self-esteem can function in terms of relatively domain-specific sociometers.

## References

- Althof, S. E., O'Leary, M. P., Cappelleri, J. C., Hvidsten, K., Stecher, V. J., Glina, S., et al. (2006). Sildenafil citrate improves self-esteem, confidence, and relationships in men with erectile dysfunction: Results from an international, multi-center, double-blind, placebo-controlled trial. *Journal of Sexual Medicine*, 3(3), 521-529.
- Anthony, D. B., Holmes, J. G., & Wood, J. V. (2007). Social acceptance and self-esteem: Tuning the sociometer to interpersonal value. *Journal of Personality and Social Psychology*, 92(6), 1024-1039.
- Anthony, D. B., Wood, J. V., & Holmes, J. G. (2007). Testing sociometer theory: Self-esteem and the importance of acceptance for social decision-making. *Journal of Experimental Social Psychology*, 43(3), 425-432.
- Aune, K. S., & Wong, N. C. H. (2002). Antecedents and consequences of adult play in romantic relationships. *Personal Relationships*, 9(3), 279-286.
- Barnett, L. R., & Nietzel, M. T. (1979). Relationship of instrumental and affectional behaviors and self-esteem to marital satisfaction in distressed and nondistressed couples. *Journal of Consulting and Clinical Psychology*, 47(5), 946-957.
- Baucom, D. H., Shoham, V., Mueser, K. T., Daiuto, A. D., & Stickle, T. R. (1998). Empirically supported couple and family interventions for marital distress and adult mental health problems. *Journal of Consulting and Clinical Psychology*, 66(1), 53-88.

- Baumeister, R. F. (1998). The self. In D. T. Gilbert & S. T. Fiske (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 680-740). New York, NY: McGraw-Hill.
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, 4(1), 1-44.
- Bellavia, G., & Murray, S. (2003). Did I do that? Self esteem-related differences in reactions to romantic partner's mood. *Personal Relationships*, 10(1), 77-95.
- Bennison, T. E. (2002). *Relations between social exclusion, state self-esteem, and aspiration levels in the selection of potential same-sex friends*. Masters of Arts Thesis. University of Canterbury.
- Brase, G. L., & Guy, E. C. (2004). The demographics of mate value and self-esteem. *Personality & Individual Differences*, 36(2), 471-484.
- Buckley, K. E., Winkel, R. E., & Leary, M. R. (2004). Reactions to acceptance and rejection: Effects of level and sequence of relational evaluation. *Journal of Experimental Social Psychology*, 40(1), 14-28.
- Buss, D. M. (1988). The evolution of human intrasexual competition: Tactics of mate attraction. *Journal of Personality and Social Psychology*, 54(4), 616-628.
- Buss, D. M. (1995). Evolutionary psychology: A new paradigm for psychological science. *Psychological Inquiry*, 6(1), 1-30.
- Buss, D. M. (2004). *Evolutionary psychology: The new science of the mind* (2nd ed.). Boston, MA: Allyn & Bacon.
- Buss, D. M. (2005). *Handbook of evolutionary psychology*. Hoboken, NJ: John Wiley & Sons.

- Buss, D. M. (2008). Foreword: The future of mating intelligence. In G. Geher & G. F. Miller (Eds.), *Mating intelligence: Sex relationships, and the mind's reproductive system* (pp. ix-xix). New York: Lawrence Erlbaum Associates.
- Buss, D. M., & Barnes, M. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology*, 50(3), 559-570.
- Buss, D. M., & Schmitt, D. P. (1993). Sexual Strategies Theory: An evolutionary perspective on human mating. *Psychological Review*, 100(2), 204-232.
- Buunk, B. P., Dijkstra, P., Fetchenhauer, D., & Kenrick, D. T. (2002). Age and gender differences in mate selection criteria for various involvement levels. *Personal Relationships*, 9(3), 271-278.
- Campbell, L., & Ellis, B. J. (2005). Commitment, love, and mate retention. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 419-442). Hoboken, NJ: John Wiley & Sons.
- Campbell, L., Simpson, J. A., Kashy, D. A., & Fletcher, G. J. O. (2001). Ideal standards, the self, and flexibility of ideals in close relationships. *Personality and Social Psychology Bulletin*, 27(4), 447-462.
- Carnelley, K. B., Israel, S., & Brennan, K. A. (2007). The role of attachment in influencing reactions to manipulated feedback from romantic partners. *European Journal of Social Psychology*, 37(5), 968-986.
- Christensen, A., & Heavey, C. L. (1999). Interventions for couples. *Annual Review of Psychology*, 50, 165-190.
- Cooley, C. H. (1902). *Human nature and the social order*. New York: Scribner.
- Coopersmith, S. (1967). *The antecedents of self-esteem*. San Francisco: Freeman.



- Cosmides, L., & Tooby, J. (1997, January 13). *Evolutionary psychology: A primer*. Retrieved April. 1999, from <http://www.psych.ucsb.edu/research/cep/primer.html>
- Cottrell, C. A., Neuberg, S. L., & Li, N. P. (2007). What do people desire in others? A sociofunctional perspective on the importance of different valued characteristics. *Journal of Personality and Social Psychology*, 92(2), 208-231.
- Cramer, D. (2003a). Acceptance and need for approval as moderators of self-esteem and satisfaction with a romantic relationship or closest friendship. *Journal of Psychology: Interdisciplinary and Applied*, 137(5), 495-505.
- Cramer, D. (2003b). Facilitativeness, conflict, demand for approval, self-esteem, and satisfaction with romantic relationships. *Journal of Psychology*, 137(1), 85-98.
- Crawford, D. W., Feng, D., Fischer, J. L., & Diana, L. K. (2003). The influence of love, equity, and alternatives on commitment in romantic relationships. *Family & Consumer Sciences Research Journal*, 31(3), 253-271.
- Darwin, C. (1880). *Descent of man, and selection in relation to sex: New edition, revised and augmented*. New York, NY: D Appleton & Company.
- Davis, R. D., & Millon, T. (1999). Models of personality and its disorders. In T. Millon, P. H. Blaney & R. D. Davis (Eds.), *Oxford textbook of psychopathology* (Vol. 4, pp. 485-522). London: Oxford University Press.
- Doss, B. D., Thum, Y. M., Sevier, M., Atkins, D. C., & Christensen, A. (2005). Improving relationships: Mechanisms of change in couple therapy. *Journal of Consulting and Clinical Psychology*, 73(4), 624-633.
- Ellis, B. J., & Kelley, H. H. (1999). The pairing game: A classroom demonstration of the matching phenomenon. *Teaching of Psychology*, 26(2), 118-121.

- Feingold, A. (1988). Matching for attractiveness in romantic partners and same-sex friends: A meta-analysis and theoretical critique. *Psychological Bulletin*, 104(2), 226-235.
- Feingold, A. (1990). Gender differences in effects of physical attractiveness on romantic attraction: A comparison across five research paradigms. *Journal of Personality and Social Psychology*, 59(5), 981-993.
- Figueredo, A. J., Sefcek, J. A., & Jones, D. N. (2006). The ideal romantic partner personality. *Personality and Individual Differences*, 41(3), 431-441.
- Fletcher, G. J. O. (2002). *The new science of intimate relationships*. Malden, MA: Blackwell Publishers.
- Fletcher, G. J. O., Simpson, J. A., & Thomas, G. (2000a). Ideals, perceptions, and evaluations in early relationship development. *Journal of Personality and Social Psychology*, 79(6), 933-940.
- Fletcher, G. J. O., Simpson, J. A., & Thomas, G. (2000b). The measurement of perceived relationship quality components: A confirmatory factor analytic approach. *Personality and Social Psychology Bulletin*, 26(3), 340-354.
- Fletcher, G. J. O., Simpson, J. A., Thomas, G., & Giles, L. (1999). Ideals in intimate relationships. *Journal of Personality and Social Psychology*, 76(1), 72-89.
- Fletcher, G. J. O., Tither, J. M., O'Loughlin, C., Friesen, M., & Overall, N. (2004). Warm and homely or cold and beautiful? Sex differences in trading off traits in mate selection. *Personality and Social Psychology Bulletin*, 30(6), 659-672.
- Gailliot, M. T., & Baumeister, R. F. (2007). Self-esteem, belongingness, and worldview validation: Does belongingness exert a unique influence upon self-esteem? *Journal of Research in Personality*, 41(2), 327-345.

- Gangestad, S. W., & Simpson, J. A. (2000). The evolution of human mating: Trade-offs and strategic pluralism. *Behavioral and Brain Sciences*, 23(4), 573-644.
- Gangestad, S. W., Thornhill, R., & Garver-Apgar, C. E. (2005). Adaptations to ovulation. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 344-371). Hoboken, NJ: John Wiley & Sons.
- Geher, G., & Miller, G. F. (2008). *Mating intelligence: sex, relationships, and the mind's reproductive system*. New York: Lawrence Erlbaum Associates.
- Geher, G., Miller, G. F., & Murphy, J. (2008). Mating intelligence: toward an evolutionarily informed construct In G. Geher & G. F. Miller (Eds.), *Mating intelligence: sex, relationships, and the mind's reproductive system* (pp. 3-34). New York: Lawrence Erlbaum Associates.
- Gutierrez, S. E., Kenrick, D. T., & Partch, J. J. (1999). Beauty, dominance, and the mating game: Contrast effects in self-assessment reflect gender differences in mate selection. *Personality and Social Psychology Bulletin*, 25(9), 1126-1134.
- Haupt, A. L., & Leary, M. R. (1997). The appeal of worthless groups: Moderating effects of trait self-esteem. *Group Dynamics*, 1(2), 124-132.
- Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology*, 60(6), 895-910.
- Hill, S. E., & Buss, D. M. (2006). The evolution of self-esteem. In M. H. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 328-333). New York, NY: Psychology Press.
- Hill, S. E., & Reeve, H. K. (2004). Mating games: The evolution of human mating transactions. *Behavioral Ecology*, 15(5), 748-756.

- Jacobson, N. S., & Addis, M. E. (1993). Research on couples and couple therapy: What do we know? Where are we going? *Journal of Consulting and Clinical Psychology*, 61(1), 85-93.
- James, W. (1890). *The principles of psychology* (Vol. 1). New York: Dover.
- Kavanagh, P. S. (2002). *The relations between social exclusion, friendship investment and state self-esteem*. Bachelor of Science Honours Project Thesis. University of Canterbury.
- Kenrick, D. T., Neuberg, S. L., Zierk, K. L., & Krones, J. M. (1994). Evolution and social cognition: Contrast effects as a function of sex, dominance, and physical attractiveness. *Personality and Social Psychology Bulletin*, 20(2), 210-217.
- Kirkpatrick, L. A., & Ellis, B. J. (2001). An evolutionary-psychological approach to self-esteem: multiple domains and multiple functions. In G. J. O. Fletcher & M. S. Clark (Eds.), *Blackwell handbook of social psychology: Interpersonal processes* (pp. 411-436). Oxford, UK: Blackwell Publishers.
- Kirkpatrick, L. A., & Ellis, B. J. (2004). An evolutionary-psychological approach to self-esteem: multiple domains and multiple functions. In M. B. Brewer & M. Hewstone (Eds.), *Self and social identity: perspectives on social psychology* (pp. 52-77). Malden, MA, US: Blackwell Publishing.
- Kirkpatrick, L. A., & Ellis, B. J. (2006). The adaptive functions of self-evaluative psychological mechanisms. In M. H. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 334-339). New York, NY, US: Psychology Press.
- Kurzban, R., & Weeden, J. (2005). HurryDate: Mate preferences in action. *Evolution and Human Behavior*, 26(3), 227-244.

- Larsen, R. J., & Buss, D. M. (2005). *Personality psychology: Domains of knowledge about human nature* (2nd ed.). Boston: McGraw-Hill.
- Leary, M. R. (1990). Responses to social exclusion: Social anxiety, jealousy, loneliness, depression, and low self-esteem. *Journal of Social & Clinical Psychology, 9*(2), 221-229.
- Leary, M. R. (1999a). Making sense of self-esteem. *Current Directions in Psychological Science, 8*(1), 32-35.
- Leary, M. R. (1999b). The social and psychological importance of self-esteem. In R. M. Kowalski & M. R. Leary (Eds.), *The social psychology of emotional and behavioral problems: Interfaces of social and clinical psychology* (pp. 197-221). Washington, DC: American Psychological Association.
- Leary, M. R. (2003). Commentary on self-esteem as an interpersonal monitor: The sociometer hypothesis (1995). *Psychological Inquiry, 14*(3-4), 270-274.
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1-62). San Diego, CA: Academic Press.
- Leary, M. R., Cottrell, C. A., & Phillips, M. (2001). Deconfounding the effects of dominance and social acceptance on self-esteem. *Journal of Personality and Social Psychology, 81*(5), 898-909.
- Leary, M. R., & Downs, D. L. (1995). Interpersonal functions of the self-esteem motive: The self-esteem system as a sociometer. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 123-144). New York: Plenum Press.
- Leary, M. R., Gallagher, B., Fors, E., Buttermore, N., Baldwin, E., Kennedy, K., et al. (2003). The invalidity of disclaimers about the effects of social feedback on self-esteem. *Personality & Social Psychology Bulletin, 29*(5), 623-636.

- Leary, M. R., Haupt, A. L., Strausser, K. S., & Chokel, J. T. (1998). Calibrating the sociometer: The relationship between interpersonal appraisals and the state self-esteem. *Journal of Personality and Social Psychology*, 74(5), 1290-1299.
- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68(3), 518-530.
- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1999). Self-esteem as an interpersonal monitor: The sociometer hypothesis. In R. F. Baumeister (Ed.), *The self in social psychology. Key readings in social psychology* (pp. 87-104). Philadelphia, PA: Psychology Press.
- Lemay, E. P., & Ashmore, R. D. (2006). The relationship of social approval contingency to trait self-esteem: Cause, consequence, or moderator? *Journal of Research in Personality*, 40(2), 121-139.
- Lemay, E. P., Clark, M. S., & Feeney, B. C. (2007). Projection of responsiveness to needs and the construction of satisfying communal relationships. *Journal of Personality and Social Psychology*, 92(5), 834-853.
- Li, N. P. (2008). Intelligent priorities: Adaptive long- and short-term mate preferences. In G. Geher & G. F. Miller (Eds.), *Mating intelligence: Sex, relationships, and the mind's reproductive system* (pp. 105-119). New York: Lawrence Erlbaum Associates.
- Li, N. P., Bailey, J. M., Kenrick, D. T., & Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the tradeoffs. *Journal of Personality and Social Psychology*, 82(6), 947-955.

- Li, N. P., & Kenrick, D. T. (2006). Sex similarities and differences in preferences for short-term mates: What, whether, and why. *Journal of Personality and Social Psychology*, 90(3), 468-489.
- Malamuth, N. M., Huppel, M., & Paul, B. (2005). Sexual coercion. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 394-418). Hoboken, NJ: John Wiley & Sons.
- Marigold, D. C., Holmes, J. G., & Ross, M. (2007). More than words: Reframing compliments from romantic partners fosters security in low self-esteem individuals. *Journal of Personality and Social Psychology*, 92(2), 232-248.
- Marlowe, F. W. (2004). Mate preferences among Hadza hunter-gatherers. *Human Nature. Special Issue on Hunter-Gatherers*, 15(4), 365-376.
- McFarland, C., & Ross, M. (1982). Impact of causal attributions on affective reactions to success and failure. *Journal of Personality and Social Psychology*, 43(5), 937-946.
- Murray, S. L. (2005). Regulating the risks of closeness: A relationship-specific sense of felt security. *Current Directions in Psychological Science*, 14(2), 74-78.
- Murray, S. L., Griffin, D. W., Rose, P., & Bellavia, G. (2006). For better or worse? Self-esteem and the contingencies of acceptance in marriage. *Personality and Social Psychology Bulletin*, 32(7), 866-880.
- Murray, S. L., Griffin, D. W., Rose, P., & Bellavia, G. M. (2003). Calibrating the sociometer: The relational contingencies of self-esteem. *Journal of Personality and Social Psychology*, 85(1), 63-84.
- Murray, S. L., Holmes, J. G., & Collins, N. L. (2006). Optimizing assurance: The risk regulation system in relationships. *Psychological Bulletin*, 132(5), 641-666.

- Murray, S. L., Holmes, J. G., & Griffin, D. W. (2000). Self-esteem and the quest for felt security: How perceived regard regulates attachment processes. *Journal of Personality and Social Psychology*, 78(3), 478-498.
- Murray, S. L., Holmes, J. G., Griffin, D. W., Bellavia, G., & Rose, P. (2001). The mismeasure of love: How self-doubt contaminates relationship beliefs. *Personality and Social Psychology Bulletin*, 27(4), 423-436.
- Murray, S. L., Holmes, J. G., MacDonald, G., & Ellsworth, P. C. (1998). Through the looking glass darkly? When self-doubts turn into relationship insecurities. *Journal of Personality and Social Psychology*, 75(6), 1459-1480.
- Murray, S. L., Rose, P., Bellavia, G. M., Holmes, J. G., & Kusche, A. G. (2002). When rejection stings: How self-esteem constrains relationship-enhancement processes. *Journal of Personality and Social Psychology*, 83(3), 556-573.
- Murray, S. L., Rose, P., Holmes, J. G., Derrick, J., Podchaski, E. J., Bellavia, G., et al. (2005). Putting the partner within reach: A dyadic perspective on felt security in close relationships. *Journal of Personality and Social Psychology*, 88(2), 327-347.
- Murstein, B. L. (1986). *Paths to marriage*. Newbury Park, CA: Sage.
- Niehuis, S. (2005). Alternative monitoring predictors: When the grass looks greener on the other side. *North American Journal of Psychology*, 7(3), 419-429.
- Overall, N. C., Fletcher, G. J. O., & Simpson, J. A. (2006). Regulation Processes in Intimate Relationships: The Role of Ideal Standards. *Journal of Personality and Social Psychology*, 91(4), 662-685.
- Penke, L., Todd, P. M., Lenton, A. P., & Fasolo, B. (2008). How self-assessments can guide human mating decisions. In G. Geher & G. F. Miller (Eds.), *Mating*



- intelligence: Sex, relationships, and the mind's reproductive system* (pp. 37-75). New York: Lawrence Erlbaum Associates.
- Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, 30(9), 1095-1107.
- Regan, P. C. (1998a). Minimum mate selection standards as a function of perceived mate value, relationship context, and gender. *Journal of Psychology & Human Sexuality*, 10(1), 53-73.
- Regan, P. C. (1998b). What if you can't get what you want? Willingness to compromise ideal mate selection standards as a function of sex, mate value, and relationship context. *Personality & Social Psychology Bulletin*, 24(12), 1294-1303.
- Robins, S. (2002). *How social exclusion influences levels of aspiration in selecting potential mates: the mediating role of state self-esteem*. Masters of Science Thesis. University of Canterbury.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic.
- Rudich, E. A., & Vallacher, R. R. (1999). To belong or to self-enhance? Motivational bases for choosing interaction partners. *Personality and Social Psychology Bulletin*, 25(11), 1387-1404.
- Santrock, J. W. (2006). *Life-span development* (10th ed.). New York: McGraw Hill.
- Schmitt, D. P. (2005). Fundamentals of human mating strategies. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 258-289). Hoboken, NJ: John Wiley & Sons.

- Shackelford, T. K. (2001). Self-esteem in marriage. *Personality & Individual Differences*, 30(3), 371-390.
- Shackelford, T. K., Pound, N., Goetz, A. T., & LaMunyon, C. W. (2005). Female infidelity and sperm competition. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 372-393). Hoboken, NJ: John Wiley & Sons.
- Simpson, J. A., & Campbell, L. (2005). Methods of evolutionary sciences. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 119-144). Hoboken, NJ: John Wiley & Sons Inc.
- Simpson, J. A., Fletcher, G. J. O., & Campbell, L. (2001). The structure and function of ideal standards in close relationships. In G. J. O. Fletcher & M. S. Clark (Eds.), *Blackwell handbook of social psychology: Interpersonal processes* (pp. 86-106). Oxford: Blackwell.
- Simpson, J. A., Gangestad, S. W., Christensen, P. N., & Leck, K. (1999). Fluctuating asymmetry, sociosexuality, and intrasexual competitive tactics. *Journal of Personality and Social Psychology*, 76(1), 159-172.
- Snapp, C. M., & Leary, M. R. (2001). Hurt feelings among new acquaintances: Moderating effects of interpersonal familiarity. *Journal of Social & Personal Relationships*, 18(3), 315-326.
- Sommer, K. L., & Baumeister, R. F. (2002). Self-evaluation, persistence, and performance following implicit rejection: The role of trait self-esteem. *Personality and Social Psychology Bulletin*, 28(7), 926-938.
- Sommer, K. L., Williams, K. D., Ciarocco, N. J., & Baumeister, R. F. (2001). When silence speaks louder than words: Explorations into the intrapsychic and interpersonal consequences of social ostracism. *Basic & Applied Social Psychology*, 23(4), 225-243.

- Srivastava, S., & Beer, J. S. (2005). How self-evaluations relate to being liked by others: Integrating sociometer and attachment perspectives. *Journal of Personality and Social Psychology*, 89(6), 966-977.
- Sugiyama, L. S. (2005). Physical attractiveness in adaptationist perspective. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 292-343). Hoboken, NJ: John Wiley & Sons.
- Symons, D. (1979). *The evolution of human sexuality*. New York: Oxford University Press.
- Symons, D. (2005). Adaptationism and human mating psychology. In D. M. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 255-257). Hoboken, NJ: John Wiley & Sons.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon.
- Todd, P. M. (2007). Coevolved cognitive mechanisms in mate search: Making decisions in a decision-shaped world. In J. P. Forgas, M. G. Haselton & W. von Hippel (Eds.), *Evolution and the social mind: Evolutionary psychology and social cognition* (pp. 145-159). New York: Psychology Press.
- Todd, P. M., & Miller, G. F. (1999). From pride and prejudice to persuasion: Satisficing in mate search. In G. Gigerenzer, P. M. Todd & the ABC Research Group (Eds.), *Simple heuristics that make us smart* (pp. 287-308). New York: Oxford University Press.
- Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man: 1871-1971* (pp. 136-179). Chicago, IL: Aldine.

- Voss, K., Markiewicz, D., & Doyle, A. B. (1999). Friendship, marriage and self-esteem. *Journal of Social & Personal Relationships*, 16(1), 103-122.
- Wheeler, J. G., Christensen, A., & Jacobson, N. S. (2001). Couple distress. In D. H. Barlow (Ed.), *Clinical handbook of psychological disorders: A step-by-step treatment manual* (3rd ed., pp. 609-630). New York, NY, US: Guilford Press.
- Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, 79(5), 748-762.

## Appendices

## Appendix A: Friendship Questionnaire

**Instructions:** Thinking about your friend, please answer the following questions.

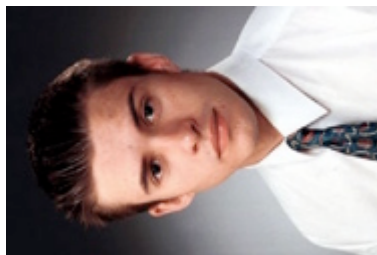
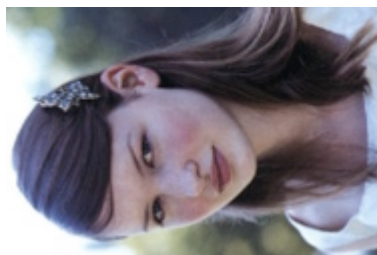
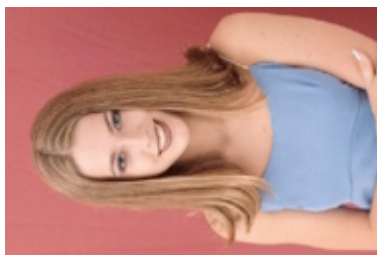
1. How would you best describe your relationship with this person?  
(acquaintance, good friend, best friend)
- [the following 14-items were rated on a 7-point scale; 1 = not at all likely, 7 = extremely likely; with separate male and female versions constructed]
2. To spend time with him/her, go away on holiday together to a destination that she has chosen but that you are not keen on
  3. Loan him/her your car to go away for the weekend even though you have plans to use it.
  4. Let him/her use your cell phone to text-message his/her boyfriend everyday (because he/she can't afford to use his/her own phone).
  5. Pick him/her up early and drive him/her to work or university everyday, even though you start an hour later than he/she does.
  6. Let him/her sleep on the couch at your place and not contribute towards living costs for two months.
  7. Let him/her use your computer to 'surf the net' and tie up the phone line, even though you're waiting for a phone call.
  8. Go to a party with him/her to keep him/her company when you really need to study for an exam the next day.
  9. Loan him/her \$500 that you have put away for a deposit on a car.
  10. Give him/her equal credit for a project that you did most of the work for.
  11. Give up your weekend to run errands and cook for him/her because he/she is too sick to get out of bed.
  12. Be nice to him/her other friends even though you don't like them.
  13. Lend him/her your video membership card, even though she never returns the videos on time.
  14. Loan him/her your favourite clothes to wear, even though you want to wear them yourself.
  15. Accept the blame for something that was actually his/her fault

**Appendix B: Interview Questions**

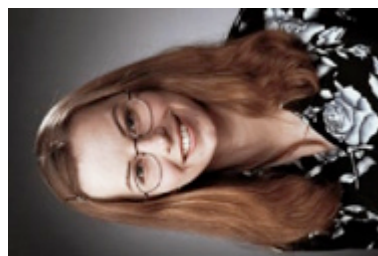
1. Why did you choose to come to the University of Canterbury?
2. What are your hobbies, now and in the past?
3. What would be the perfect lifestyle for you?
4. If you could travel anywhere in the world, where would you go? Why?
5. What is one memorable thing that has happened to you since arriving at the University of Canterbury?
6. What is one habit you'd like to break?
7. If you could have one wish granted, what would that be?
8. What is the activity you dislike doing the most?
9. What is one of your biggest fears?
10. What is one thing about yourself that most people would consider surprising?
11. What is an accomplishment that you are proud of?
12. What is your favourite class at the University of Canterbury? Why?
13. What would you like to do after graduating from the University of Canterbury?
14. What is something you have always wanted to do but probably never will be able to do?
15. What is one strange thing that has happened to you since you've been at the University of Canterbury?
16. What is one thing in your life makes you feel stressed out?
17. If you could change one thing about yourself, what would that be?
18. What do you look for in a friend?
19. Is it difficult or easy for you to meet people? Why?
20. What is one memorable experience you've had with a good friend?
21. Describe a happy childhood memory.

# Appendix C: Aspirations Programs Photos

**High Attractive Group**



**Moderately Attractive Group**



**Low Attractive Group**

